D-130/131

SERVICE MANUAL

UK Model
AEP Model
D-130/131
US Model
Canadian Model
E Model
Australian Model
D-131

Discman
MEGA BASS
CD COMPACT PLAYER D-131
SONY
PLAY MODE
REPEAT/ ENTER

Photo: D-131

Discman

Model Name Using Similar Mechanism	D-121
CD Mechanism Name	KSM-331AAN (S)

SPECIFICATIONS

System	Compact disc digital audio system
Laser diode properties	Material: GaAlAs Wavelength: λ =780 nm Emission duration: Continuous Laser output: Less than 44.6 µW (This output is the value measured at a distance of 200 mm from the objective lens surface on the Optical Pick-up Block.)
Error correction	Sony Super Strategy Cross Interleave Reed Solomon Code
D-A conversion	1-bit quartz time-axis control
Frequency response	20 – 20,000 Hz $^{+1}_{-2}$ dB (measured by EIAJ CP-307)
Output (at 4.5 V input level)	Line output (stereo minijack) Output level 0.7 V rms at 50 kilohms Load impedance over 10 kilohms Headphones (stereo minijack) 15 mW + 15 mW at 16 Ω

General

Power requirements

- DC IN 4.5 V jack accepts the Sony AC power adaptor (not supplied with D-130) or an optional AC power adaptor AC-E45L, for use on:

Where purchased	Operating voltage
European and Asian countries	220 – 230 V AC, 50 Hz
U.S.A., Canada, Central and South America	120 V AC, 60 Hz
United Kingdom, Australia	240 V AC, 50 Hz
Middle East	110 – 240 V AC, 50/60 Hz
Other countries	100 – 240 V AC, 50/60 Hz

- DC 2.4 V Rechargeable battery pack (supplied only with D-133) or an optional battery pack BP-DM10
- DC IN 4.5 V accepts the Sony CPM-300P mount plate and CPM-300PK mount arm for use on car battery.
- DC 3 V two size AA (LR6) alkaline batteries

Dimensions	Approx. 130 × 30.5 × 142 mm (5 1/8 × 1 1/4 × 5 5/8 in.) (w/h/d) incl. projecting parts and controls
Mass	Approx. 270 g (9.6 oz.) without rechargeable battery
Supplied accessories	AC power adaptor (not supplied with D-130) (1) Connecting cord (phono plug × 2 ↔ stereo miniplug) (1) Stereo headphones

Design and specifications subject to change without notice.

COMPACT DISC COMPACT PLAYER

SONY®

MICROFILM

TABLE OF CONTENTS

Section *Title* *Page*

Specifications ········· 1

1. **SERVICE NOTE** ········· 3

2. **GENERAL**

Location and Function of Contorols ········· 3

3. **SERVICE MODE** ········· 4

4. **ELECTRICAL ADJUSTMENTS**

4-1. CD Section ········· 6

5. **DIAGRAMS**

5-1. Block Diagram ········· 11
5-2. Printed Wiring Board ········· 13
5-3. Schematic Diagram ········· 17

6. **EXPLODED VIEWS** ········· 25

7. **ELECTRICAL PARTS LIST** ········· 27

CLASS 1 LASER PRODUCT
LUOKAN 1 LASERLAITE
KLASS 1 LASERAPPARAT

This Compact Disc player is classified as a CLASS 1 LASER product.
The CLASS 1 LASER PRODUCT label is located on the bottom exterior.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

SECTION 1
SERVICE NOTE

NOTES ON HANDLING THE OPTICAL PICK-UP BLOCK OR BASE UNIT

The laser diode in the optical pick-up block may suffer electrostatic break-down because of the potential difference generated by the charged electrostatic load, etc. on clothing and the human body. During repair, pay attention to electrostatic break-down and also use the procedure in the printed matter which is included in the repair parts.
The flexible board is easily damaged and should be handled with care.

NOTES ON LASER DIODE EMISSION CHECK

The laser beam on this model is concentrated so as to be focused on the disc reflective surface by the objective lens in the optical pick-up block. Therefore, when checking the laser diode emission, observe from more than 30 cm away from the objective lens.

Before Replacing the Optical Pick-Up Block

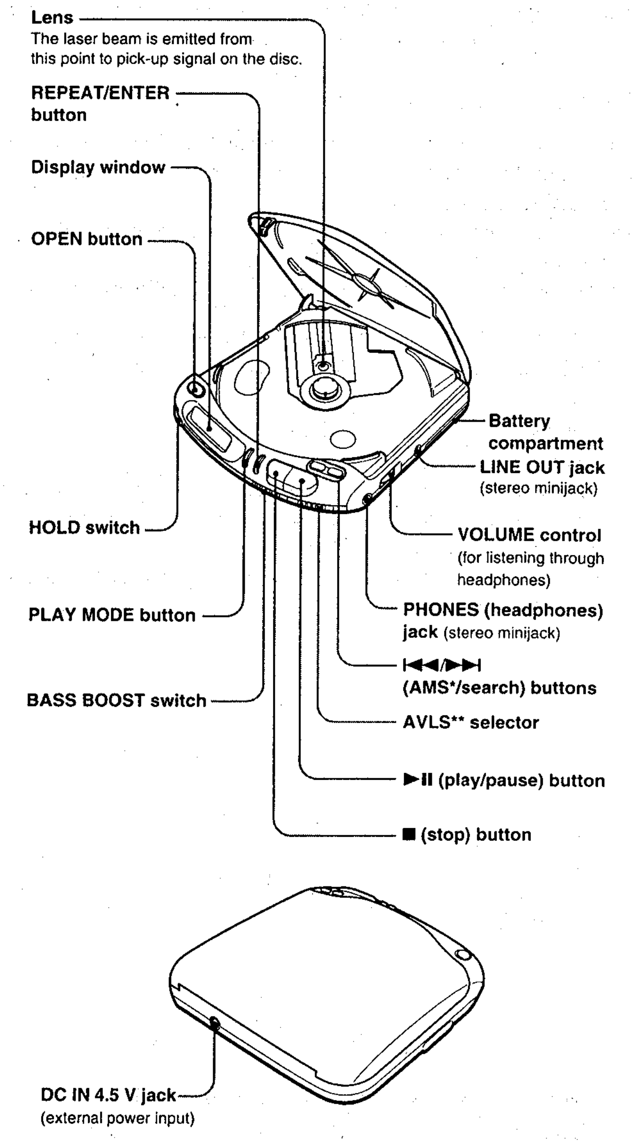
Please be sure to check thoroughly the parameters as par the "Optical Pick-Up Block Checking Procedures" (Part No. : 9-960-027-11) issued separately before replacing the optical pick-up block.
Note and specifications required to check are given below.

- FOK output : IC501 ㉗ pin
  When checking FOK, remove the lead wire to disc motor .
- S curv P-to-P value : 2.5 Vp-p
  When checking S curve P-to-P value, remove the lead wire to disc motor.
- Adjusted part for focus gain adjustment : RV502
- RF signal P-to-P value : 0.7 – 1.1Vp-p
- Traverse signal P-to-P value :0.7 – 1.7Vp-p
- The repairing grating holder is impossible.
- Adjusted part for tracking gain adjustment : RV504

SECTION 2
GENERAL

This section is extracted from instruction manual.

Location and Function of Controls


Lens
The laser beam is emitted from this point to pick-up signal on the disc.
REPEAT/ENTER button
Display window
OPEN button
Battery compartment
LINE OUT jack (stereo minijack)
HOLD switch
VOLUME control (for listening through headphones)
PLAY MODE button
PHONES (headphones) jack (stereo minijack)
I◀◀/▶▶I (AMS*/search) buttons
BASS BOOST switch
AVLS** selector
▶II (play/pause) button
■ (stop) button
DC IN 4.5 V jack (external power input)

* AMS: Automatic Music Sensor
** AVLS: Automatic Volume Limiter System

SECTION 3
SERVICE MODE

Precautions for Checking Emission of Laser Diode

Laser light of the equipment is focused by the object lens in the optical pickup so that the light focuses on the reflection surface of the disc. Therefore, be sure to keep your eyes more then 30 cm apart from the object lens when you check the emission of laser diode.

Laser Diode Checking Methods

During normal operation of the equipment, emission of the laser diode is prohibited unless the upper panel is closed while turning ON the S808 (push switch type).
However, in the service mode, the laser diode always emits light regardless of the S808 turned ON or OFF.
The following two checking methods for the laser diode are operable.

- **Method - 1 (in the service mode or normal operation): Emission of the laser diode is visually checked.**

1. Open the upper panel.
2. Push the S808 as shown in Fig. 1.
   (This is not needed in the service mode.)
3. Check the object lens for confirming normal emission of the laser diode. If not emitting, there is a trouble in the automatic power control circuit or the optical pickup.
   During normal operation, the laser diode is turned ON about 2.5 seconds for focus searching.

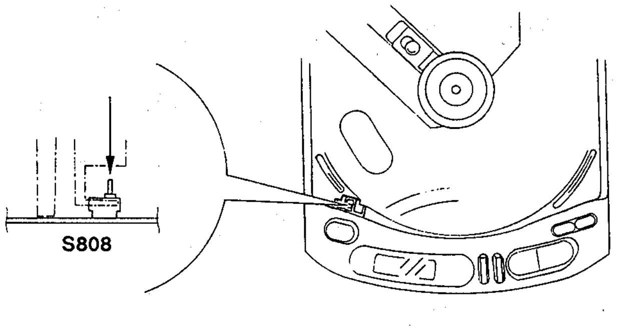
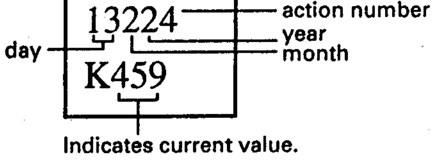


Fig. 1 Method to push the S808

- **Method - 2 (In service mode or normal operation): Check the value of current flowing in the laser diode.**

1. Remove the upper panel.
2. Read the current printed on the label attached on the rear side of the optical pickup.

(Label stuck outside of the optical pickup)



Indicates current value.
(In this case, 45.9mA)

3. Connecta VTVM as shown in Fig. 2 (terminate it with R501, 1 Ω at both ends).
4. Press the ▷II key.
5. Calculate current value by the reading of the VTVM.
   Reading of the tester (V) +1=current value (A)
   (Example) Reading of the VTVM of 0.046 V:
   0.046+1=0.046 (A) =46 mA
6. Check that the current value is within the following range.
   - Current value of the label $^{+5}_{-11}$ mA (25 °C)
     Variation by temperature: 0.4 mA/C
     Current increases with temperature increased.
     Current decreases with temperature decreased.

   If the current is more than the range above, there is a trouble in the automatic power control circuit or the laser diode is in deterioration. If less than the range, a trouble exists in the automatic power control circuit or the optical pickup.

– MAIN BOARD – (Side B)

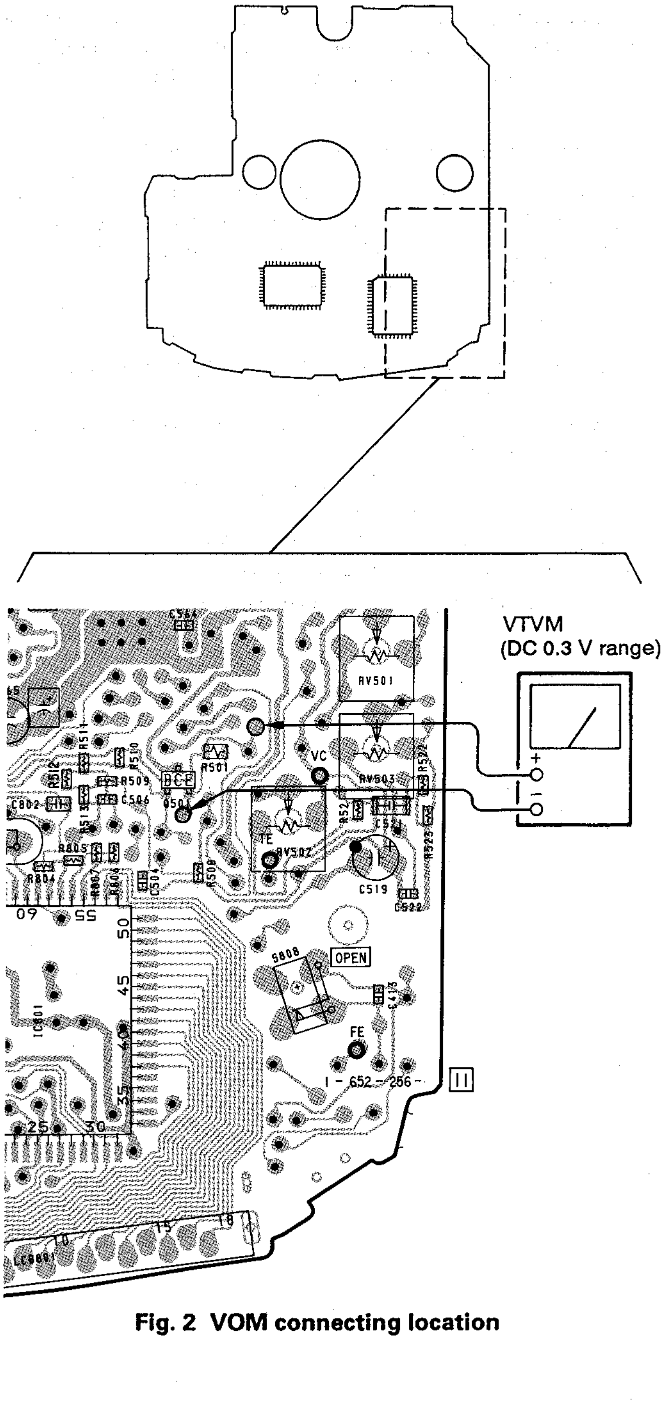
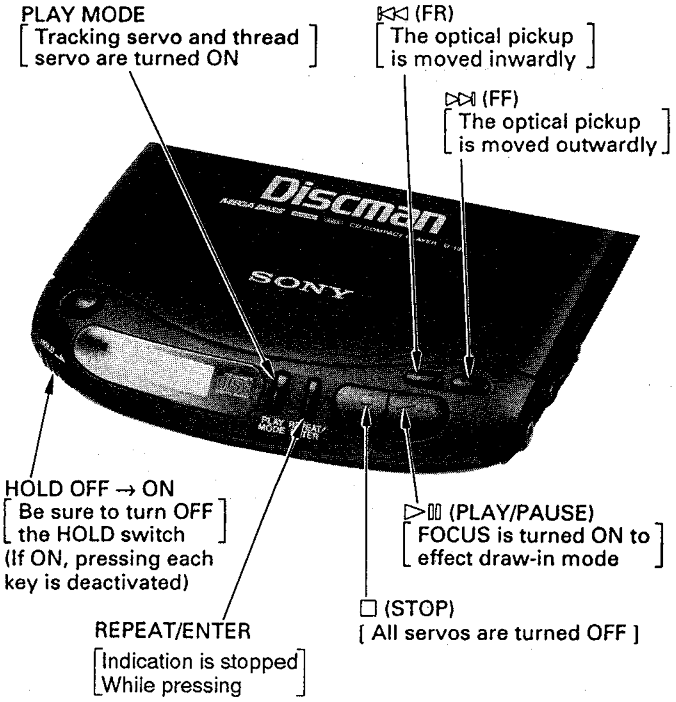


Fig. 2 VOM connecting location

Service Mode (Service program)

The equipment is provided with a service program built in the microcomputer, like conventional models.
Service program operation methods are described in the following.


PLAY MODE
[Tracking servo and thread servo are turned ON]
|◁◁ (FR)
[The optical pickup is moved inwardly]
▷▷| (FF)
[The optical pickup is moved outwardly]
Discman
SONY
HOLD OFF → ON
[Be sure to turn OFF the HOLD switch]
(If ON, pressing each key is deactivated)
▷II (PLAY/PAUSE)
[FOCUS is turned ON to effect draw-in mode]
□ (STOP)
[All servos are turned OFF]
REPEAT/ENTER
[Indication is stopped While pressing]

Descriptions in [ ] indicate major operations in the service mode. For more information, see Step 2.

Fig. 3 Layout of each key

- **Step 1 (Service mode setting methods)**

1. Turn OFF the HOLD switch with external power supply disconnected (power is not applied to the set).
2. Solder the jumper wire across the TEST terminals (pin ⑥ , IC801 (TEST) is grounded).
3. Keepthe S808 in continuously pressed state. (Or, solder the jumper wire across the DOOR terminals.)

Thus, the set is switched to the service mode.

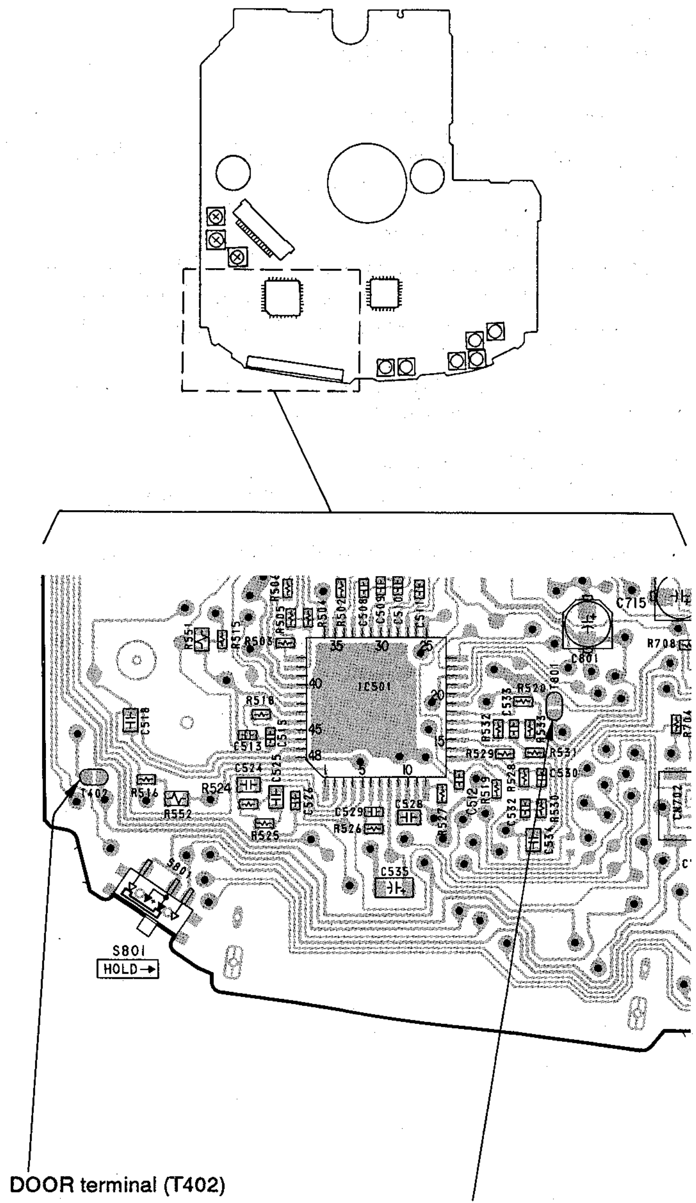
- **Step 2 (Operation in the service mode)**

1. Once the service mode is effected, the LCD displays 5 indications each of which is repeatedly displayed.
   However, the following operations can be activated even if LCD indication is effected.
2. By pressing the ▷▷| or |◁◁ key, the optical pickup is movable inwardly or outwardly. However, if this is activated, tracking servo and sled servo are turned OFF, so it can be turned ON by pressing the PLAY MODE key if required.
3. By pressing the REPEAT/ENTER key, all indications light up. With the key released, repeated indication is continued, so you can check each segment.
4. By pressing the ▷II key, focus is turned ON from focus searching while entering CLV-S (draw-in mode).
   Without disc, focus searching is repeated continuously.
5. By pressing the PLAY MODE key, tracking servo, sled servo and CLV-A (servo in PLAY) are turned ON.
6. When 4. and 5. are performed, playing begins. No muting is ON in the service mode.
7. By pressing the □ key, all servos (focus, tracking and thread) are turned OFF. However, the disc motor revolves for awhil by inertia.

- **Step 3 (Resetting of service mode)**

1. Be sure to disconnect the external power supply and remove the soldered jumper wire at the TEST terminals connected before in setting.
2. The set thus becomes available for normal operation.

– MAIN BOARD – (Side A)


IC501
T402
T801
S801
HOLD→
C715
R708
C801
R551
R515
R504
R516
C518
R524
R552
R525
C535
R529
R531
R530

DOOR terminal (T402)
with this terminal soldered for jumpering, the S802 is fixed in continuously pressed stste, while activating to press each key.
[Be sure to remove the soldered jumper wire after the completion of service.]

TEST terminal (T801)
Location to be soldered for jumpering in the service mode
[Be sure to remove the soldered jumper wire after completion of checking and adjusting in the service mode.]

Fig. 4 Location of Test and Door terminal

SECTION 4
ELECTRICAL ADJUSTMENTS

CD SECTION

Precautions for Adjustment

1. Before beginning adjustment, set the equipment to service mode. After the completion of adjustment, be sure to reset the service mode.
   For more information, see "Service Mode (service program)" on Pages 5
2. Perform adjustments in the order given.
3. Use YEDS-18 disc (Part No. : 3-702-101-01) unless otherwise indicated.
4. Power supply voltage requirement. : DC3 V

HOLD switch	:	OFF
VOLUME switch	:	Minimum
AVLS switch	:	OFF
BASS BOOST switch	:	NORM

Before Beginning Adjustment

Set the equipment to service mode (See page 5) and check the following. If there is an error, repair the equipment.

• Checking of the sled motor

1. Press the ▷▷| and |◁◁ keys and check that the optical pickup can move smoothly without sluggishness or abnormal noise in innermost periphery → outermost periphery → innermost periphery.
   ▷▷| : The optical pickup moves outwardly.
   |◁◁ : The optical pickup moves inwardly.

• Checking of focus searching

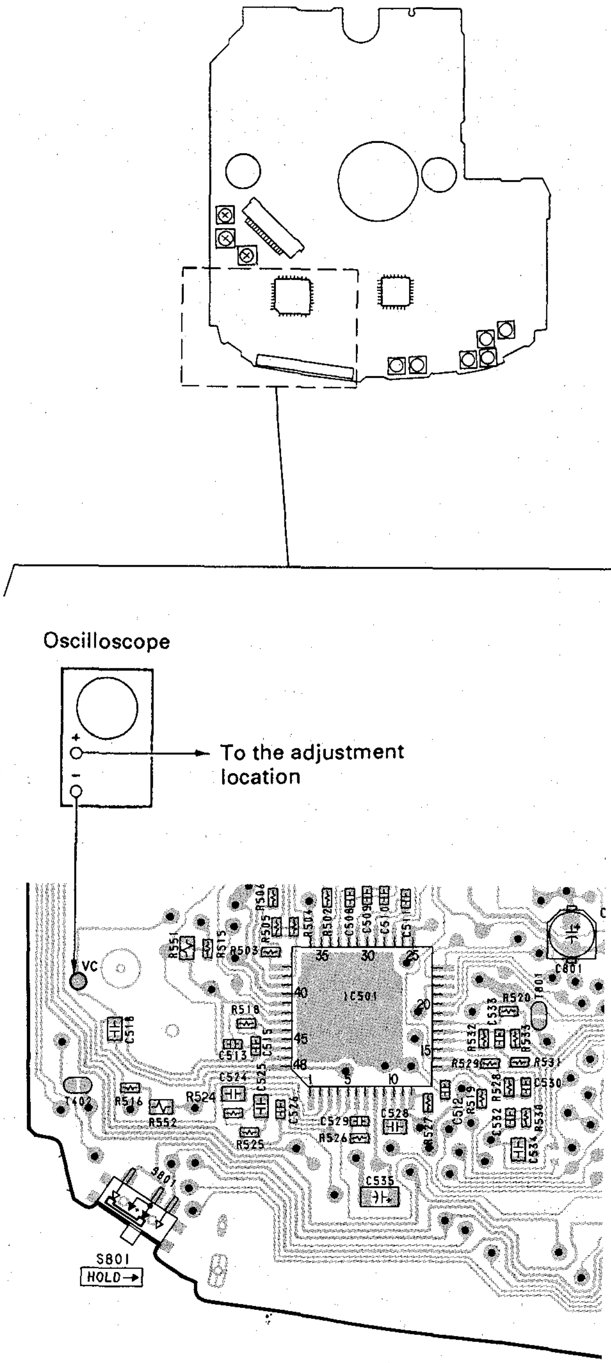
1. Press the ▷II key. (Focus searching operation is activated continuously.)
2. Check the object lens of the optical pickup for smooth up/down motion without sluggishness or abnormal noise.
3. Press the □ key.
   Check that focus searching operation is deactivated. If not, again press the □ key slightly longer.

• VC (1/2Vcc) connection location

Focus bias adjustment
Tracking balance adjustment
For any of the adjustments above, connect the minus side of the oscilloscope at the point of the following view.

Connection Location:

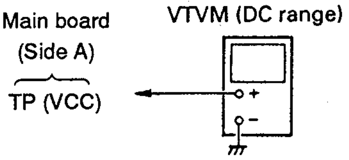
– MAIN BOARD – (Side A)


Oscilloscope
+
–
To the adjustment location
VC
IC501
R551
R515
R503
R504
R505
R502
C508
C509
C510
C511
R518
C513
C515
C525
C524
C516
T402
R516
R552
R524
R525
C526
C528
C529
R526
R527
C512
C532
R528
R530
R529
R531
R532
C533
R533
R520
C801
C530
C534
C535
S801
HOLD→
1
5
10
15
20
25
30
35
40
45
48

VCC Check

∗ Use a SUM-3battery for VCC Check

Checking Procedure :


Main board
(Side A)
TP (VCC)
VTVM (DC range)
+
-

1. Connect the VTVM to (VCC) of the main Board.
2. Check for 3.25 ± 0.1 V reading on the VTVM.

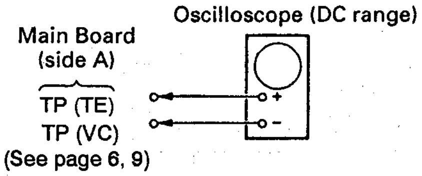
Connection and Adjustment Location: MAIN board
(side A, side B)
(See page 9)

Tracking Balance Adjustment

Condition:

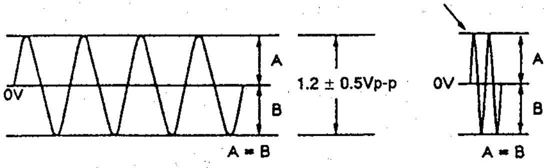
- Hold the set in horizontal state.

Adjustment Procedure:


Oscilloscope (DC range)
Main Board
(side A)
TP (TE)
TP (VC)
(See page 6, 9)
+
-

1. Connect the oscilloscope to TP (TE) of the main board.
2. Set the equipment to service mode stop state. (See page 5)
3. Move the optical pickup by pressing the ▷▷| and |◁◁ keys.
4. Put the disc (YEDS-18).
5. Press the ▷II key.
   [From focus searching, focus is turned ON while entering CLV drawing-in mode. Tracking and thread are turned OFF.
6. Audjust RV501 so that the waveform on the oscillscope becomes up/down symmetrical with an axis of 0 V.

Note : Take long sweep time for easy monitoring.


0V
A
B
A = B
1.2 ± 0.5Vp-p
0V
A
B
A = B

7. Stop revolving of the disc motor by pressing the ☐ key.
8. After the completion of adjustment, reset service mode. (See page 5)

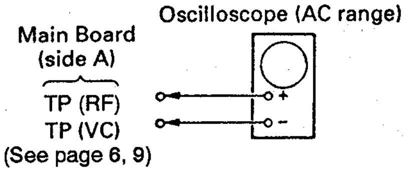
Connection and Adjustment Location: MAIN board (side A)
(See page 9)

RF SIGNAL WAVEFORM (EYE PATTERN) CHECKING

Condition:

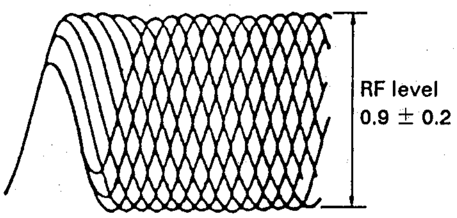
- Hold the set in horizontal state.

Adjustment Procedure:



1. Hold the set in service mode stop state. (see page 5)
2. Connect the oscilloscope to the test point TP (RFO) of the main board.
3. Move the optical pickup by pressing the ▷▷I and I◁◁ keys. (To display the eye pattern more clearly, move the optical pickup to the music range of the disc.)
4. Put the disc (YEDS-18).
5. Press the ▷II key.
   [From focus searching, focus is turned ON while entering CLV drawing-in mode. Tracking and thread are turned OFF.
6. Press the PLAY MODE key. (Both tracking and thread are turned ON.)

VOLT DIV : 20 mV (With the 10:1 probe in use)
TIME DIV : 500 ns



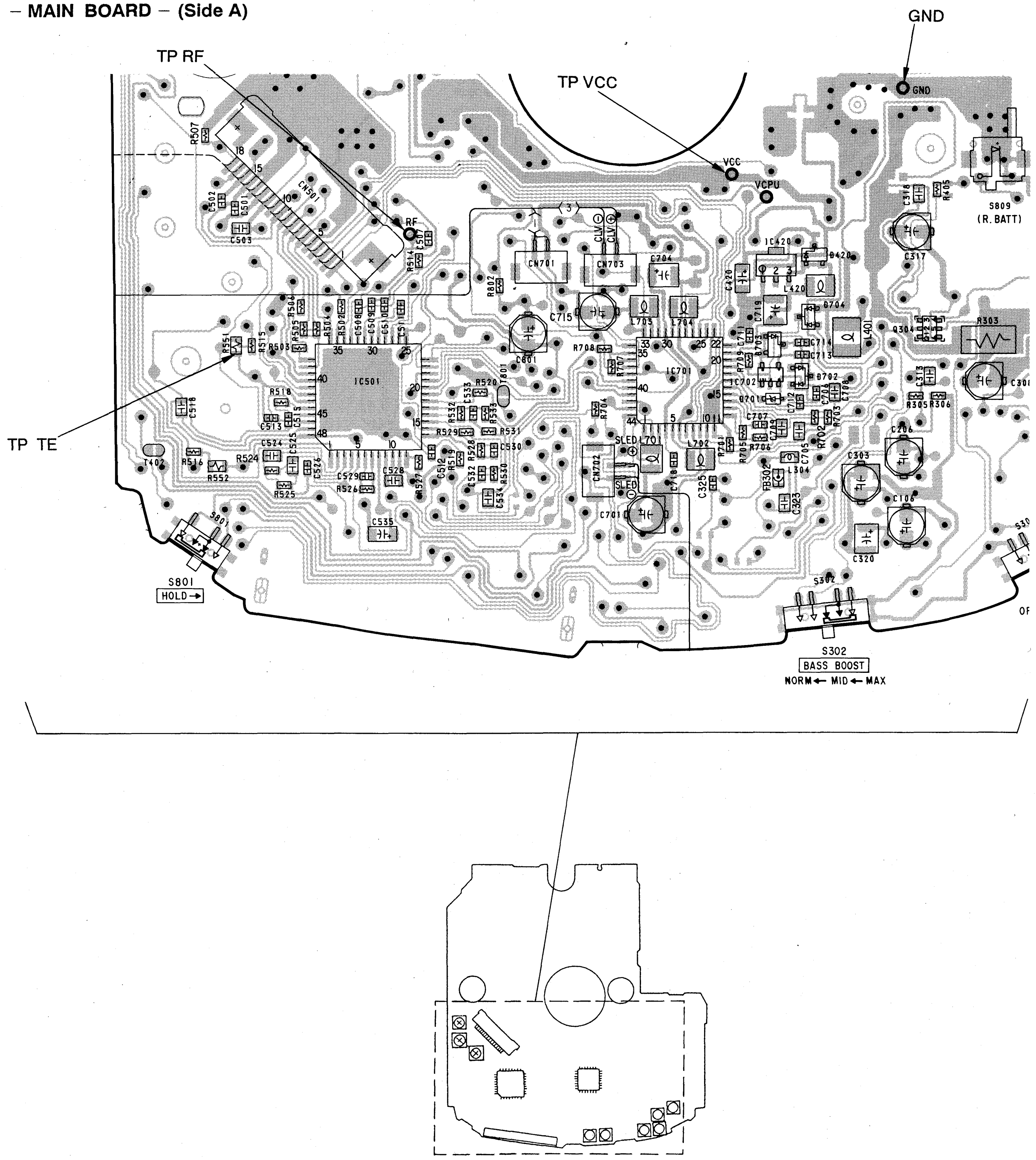
To watch the eye pattern, set the oscilloscope to AC range and increase the vertical sensitivity of the oscilloscope for easy watching.

7. Stop revolving of the disc motor by pressing the □ key.
8. After the completion of checking, reset service mode. (see page 5.)

Connection Location : MAIN board (Side A)
(See page 9)

Connection and Adjustment Location:

– MAIN BOARD – (Side A)


TP RF
TP VCC
GND
TP TE
IC501
IC701
S809
(R. BATT)
S801
HOLD→
S302
BASS BOOST
NORM← MID← MAX

Focus/Tracking Gain Adjustment

To perform this adjustment precisely, a servo analyser or CD jigs are required.

However, there is an allowance for this gain, so substantially no problems occur normally even if it is slightly deviated. Therefore, you need not perform this adjustment.

Focus/tracking gain determines the follow-up property of the pickup to mechanical shocks during 2-axis device operation. However, since these requirements are inconsistent, the equipment is adjusted to compromise both properties.

- With gain increased, noise in 2-axis device operation also increases.
- With gain decreased, the equipment becomes less immune to mechanical shocks, where sound jumping often occurs.

This adjustment has to be performed upon replacing any of the following parts.

- Optical pickup
- RV503 (Focus gain VR)
- RV502 (Tracking gain VR)

Nomally, be sure not to move RV503 (focus gain VR) and RV502 (tracking gain VR).

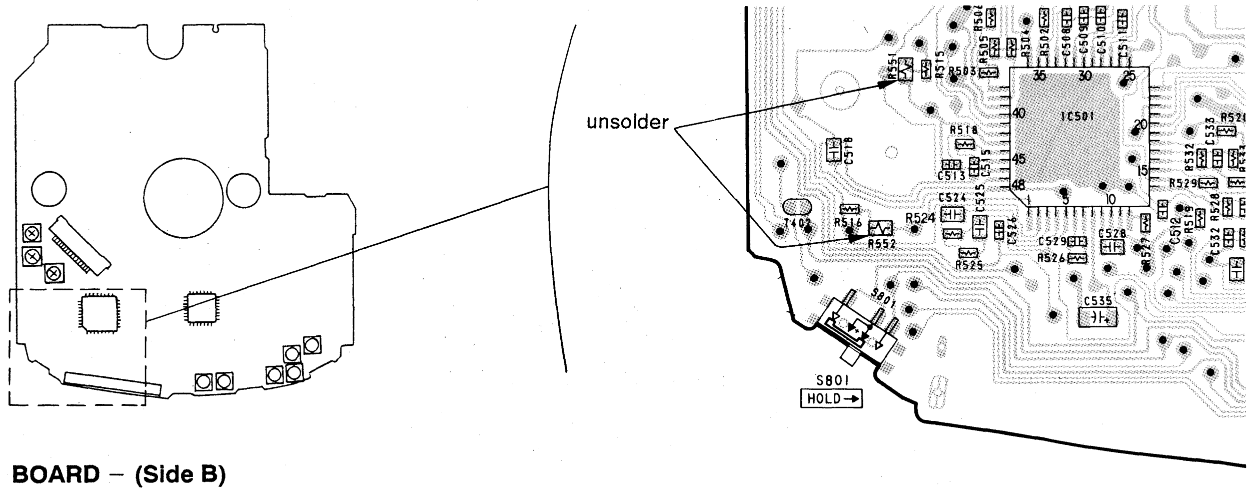
With this equipment, it is very difficult to simply perform this adjustment. If the equipment is not so often suffering from "occasional sound jumping" or not easily decided for complete repairing, use the CD jigs for the adjustment. To connect the CD jigs, see the right view. For more detailed adjustment methods, see the separate CD jig operation manual.

CD jig connecting methods:

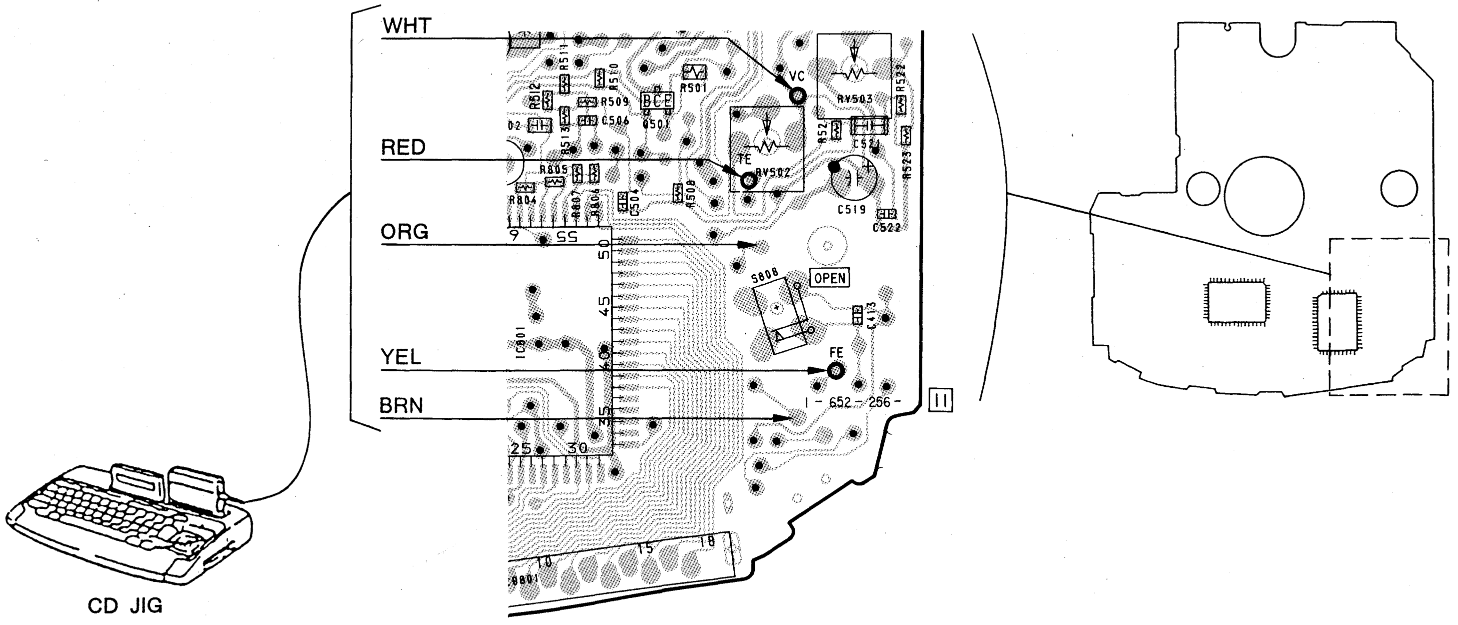
Remove Jumper resistor (R551 and R552) and connect the euipment to the CD jigs as shown in the right view. At that time, connect the IC501 side and each VR side to the output to the CD jigs and the input from the CD jigs, respectively.

Connection and Adjustment Location:

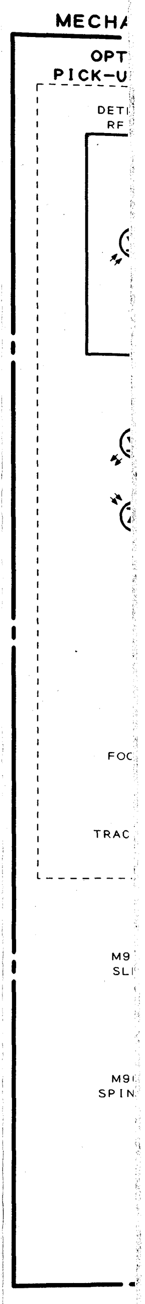
– MAIN BOARD – (Side A)


unsolder
IC501
R551
R552
S801
HOLD→

– MAIN BOARD – (Side B)


WHT
RED
ORG
YEL
BRN
VC
TE
FE
RV503
RV502
S808
OPEN
IC801
CD JIG

5-1. BLO

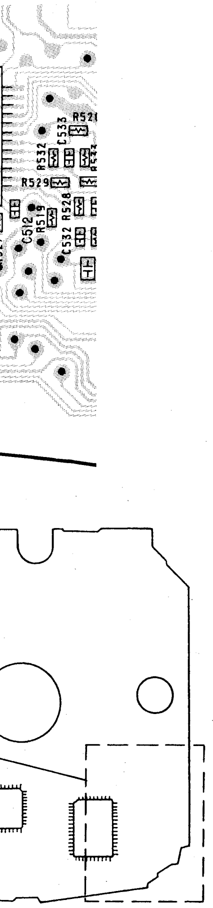

MECHA
OPT
PICK-U
DET
RF
FOC
TRAC
M9
SL
M9
SPIN

) and RV502

erform this

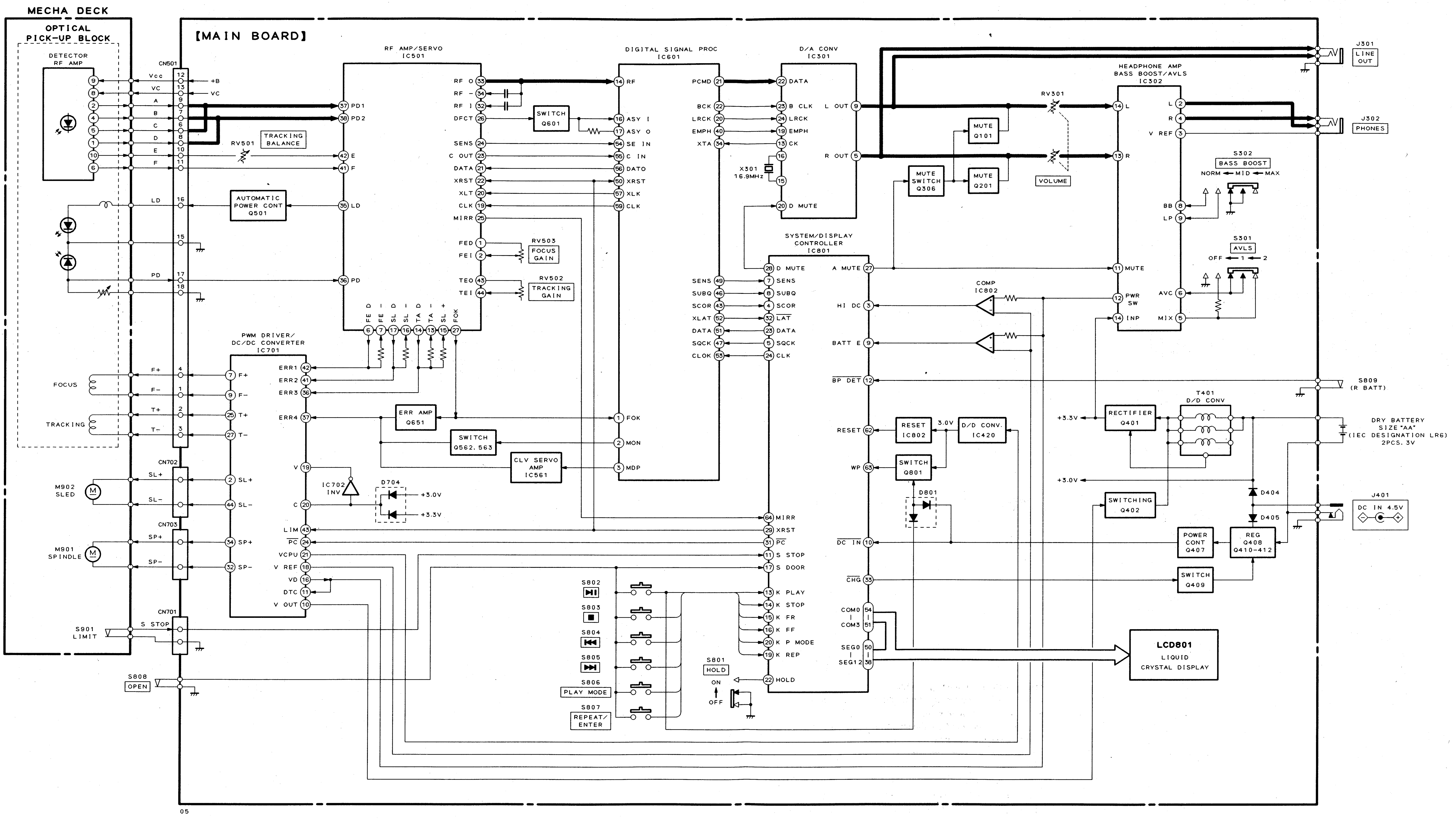
ional sound
ing, use the
see the right
he separate

connect the
At that time,
ut to the CD


R521
R532
C533
R529
R528
C512
C532

SECTION 5
DIAGRAMS

5-1. BLOCK DIAGRAM


MECHA DECK
OPTICAL PICK-UP BLOCK
DETECTOR RF AMP
CN501
Vcc
VC
A
B
C
D
E
F
LD
PD
+B
VC
[MAIN BOARD]
RV501 TRACKING BALANCE
AUTOMATIC POWER CONT Q501
RF AMP/SERVO IC501
PD1
PD2
RF O
RF −
RF I
DFCT
SENS
C OUT
DATA
XRST
XLT
CLK
MIRR
FED
FEI
TEO
TEI
FE D
FE I
SL D
SL I
TA D
TA I
SL +
FOK
SWITCH Q601
RV503 FOCUS GAIN
RV502 TRACKING GAIN
DIGITAL SIGNAL PROC IC601
RF
ASY I
ASY O
SE IN
C IN
DATO
XRST
XLK
CLK
FOK
MON
MDP
MIRR
PCMD
BCK
LRCK
EMPH
XTA
X301 16.9MHz
D/A CONV IC301
DATA
B CLK
LRCK
EMPH
CK
D MUTE
L OUT
R OUT
MUTE Q101
MUTE Q201
MUTE SWITCH Q306
RV301
VOLUME
HEADPHONE AMP BASS BOOST/AVLS IC302
V REF
BB
LP
MUTE
PWR SW
INP
AVC
MIX
S302 BASS BOOST
NORM MID MAX
S301 AVLS
OFF 1 2
J301 LINE OUT
J302 PHONES
SYSTEM/DISPLAY CONTROLLER IC801
D MUTE
SENS
SUBQ
SCOR
LAT
DATA
SQCK
CLK
XLAT
CLOK
A MUTE
HI DC
BATT E
BP DET
RESET
WP
DC IN
CHG
COM0 COM3
SEG0 SEG12
MIRR
XRST
PC
S STOP
S DOOR
K PLAY
K STOP
K FR
K FF
K P MODE
K REP
HOLD
COMP IC802
RESET IC802
3.0V
D/D CONV. IC420
SWITCH Q801
D801
RECTIFIER Q401
T401 D/D CONV
+3.3V
+3.0V
SWITCHING Q402
D404
D405
POWER CONT Q407
REG Q408 Q410-412
SWITCH Q409
S809 (R BATT)
DRY BATTERY SIZE "AA" (IEC DESIGNATION LR6) 2PCS. 3V
J401 DC IN 4.5V
LCD801 LIQUID CRYSTAL DISPLAY
PWM DRIVER/ DC/DC CONVERTER IC701
ERR1
ERR2
ERR3
ERR4
F+
F−
T+
T−
SL+
SL−
SP+
SP−
V
C
LIM
PC
VCPU
V REF
VD
DTC
V OUT
ERR AMP Q651
SWITCH Q562, 563
CLV SERVO AMP IC561
IC702 INV
D704
+3.0V
+3.3V
FOCUS
TRACKING
CN702
M902 SLED
CN703
M901 SPINDLE
CN701
S STOP
S901 LIMIT
S808 OPEN
S802 ▶II
S803 ■
S804 I◀◀
S805 ▶▶I
S806 PLAY MODE
S807 REPEAT/ ENTER
S801 HOLD
ON
OFF
05

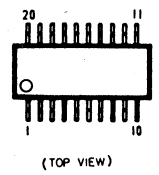
5-2. PRINTED WIRING BOARD

• Semiconductor Location

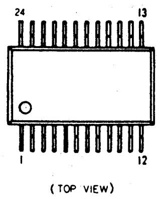
Ref. No.	Location	Ref. No.	Location
D101	G-12	IC801	H-17
D201	G-12	IC802	G-16
D301	G-12	IC803	D-18
D401	C-14		
D403	B-15	Q101	G-11
D404	B-15	Q201	G-11
D405	B-15	Q304	G-9
D420	F-9	Q401	F-13
D701	G-8	Q402	F-14
D702	G-8	Q407	B-15
D703	G-8	Q408	B-14
D704	G-9	Q409	C-15
D801	G-16	Q410	C-15
		Q411	B-15
IC301	H-14	Q412	B-14
IC302	G-13	Q501	F-18
IC420	F-8	Q561	G-16
IC501	G-5	Q562	F-16
IC561	E-18	Q563	F-16
IC601	G-15	Q601	E-17
IC701	G-8	Q801	F-16
IC702	G-8		

• Semiconductor Lead Layouts

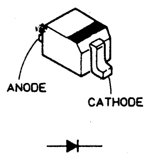
BA3574FS-T1


20
11
1
10
(TOP VIEW)

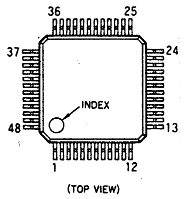
TC9293FN-EL


24
13
1
12
(TOP VIEW)

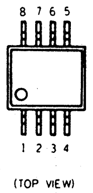
DTZ5.6-TT11
MA8039-L-TX


ANODE
CATHODE

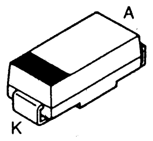
CXA1672Q


36
25
37
24
INDEX
48
13
1
12
(TOP VIEW)

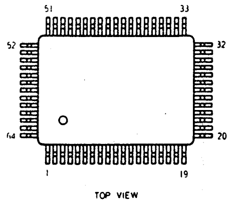
TLV2362ID-ELL2500


8 7 6 5
1 2 3 4
(TOP VIEW)

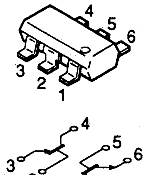
SFPB-52V



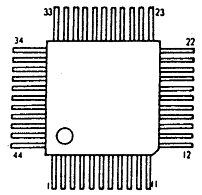
CXD2517Q
CXP508L6-005Q


51
33
52
32
64
20
1
19
TOP VIEW

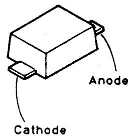
IMD2



SC111281LFU


33
23
34
22
44
12
1
11

DTZ15-TT11


Anode
Cathode

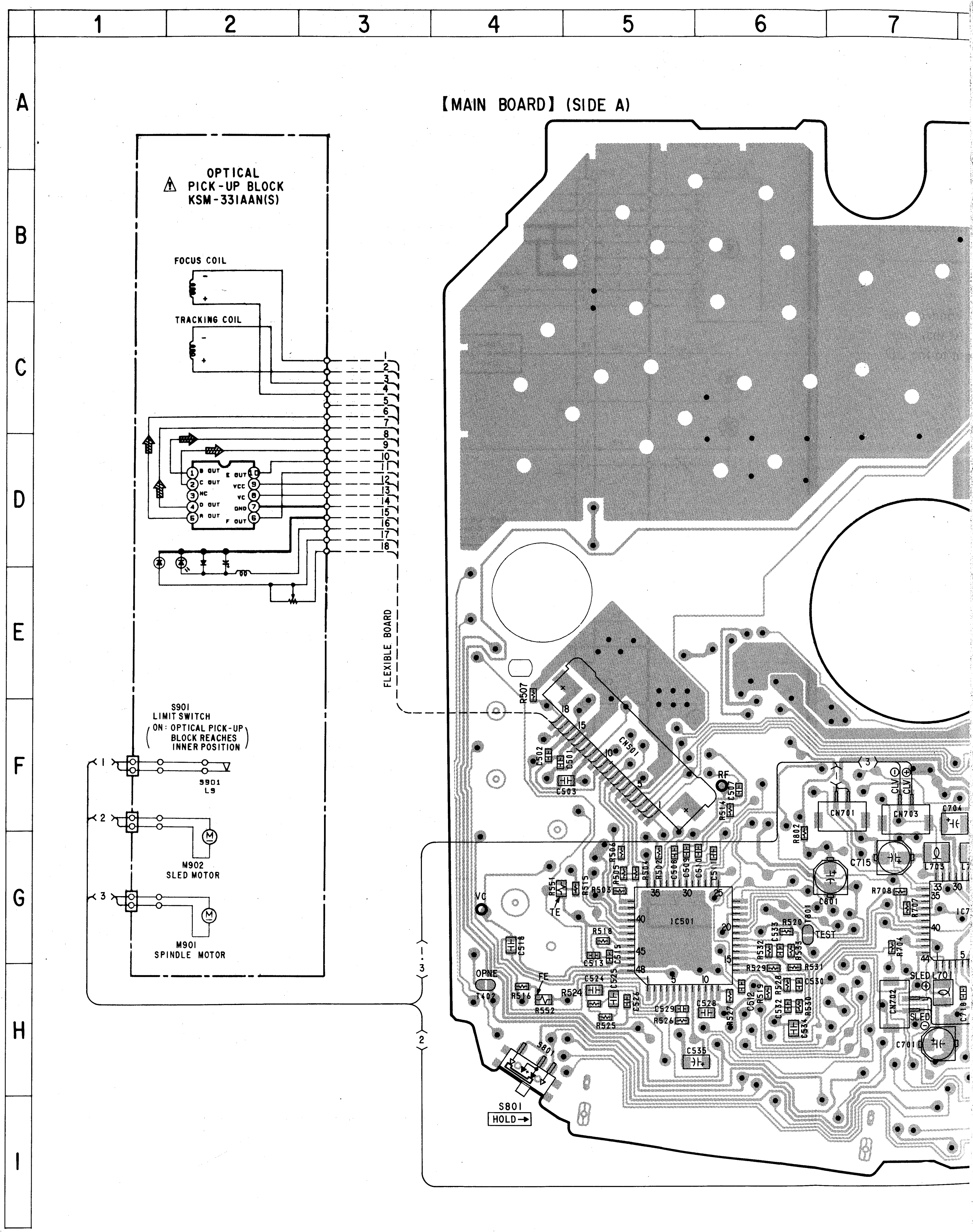
Note on Printed Wiring Board:

- ○—— : parts extracted from the component side.
- ● : Through hole.
- ▨ : Pattern from the side which enables seeing.

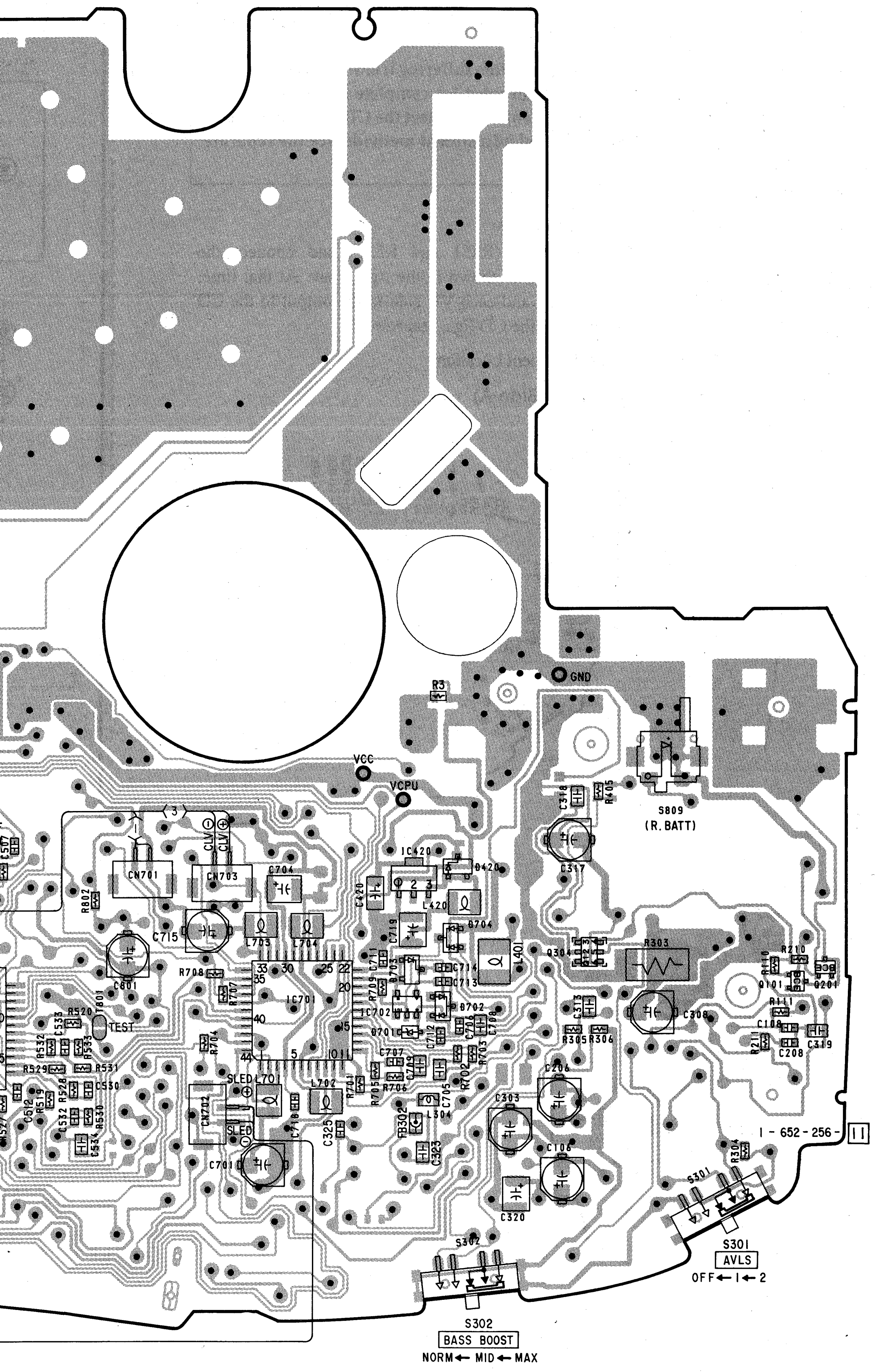
(The other layers' patterns are not indicated.)

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component Side)	Parts on the parts face side seen from the parts face are indicated.

- △ : internal component.

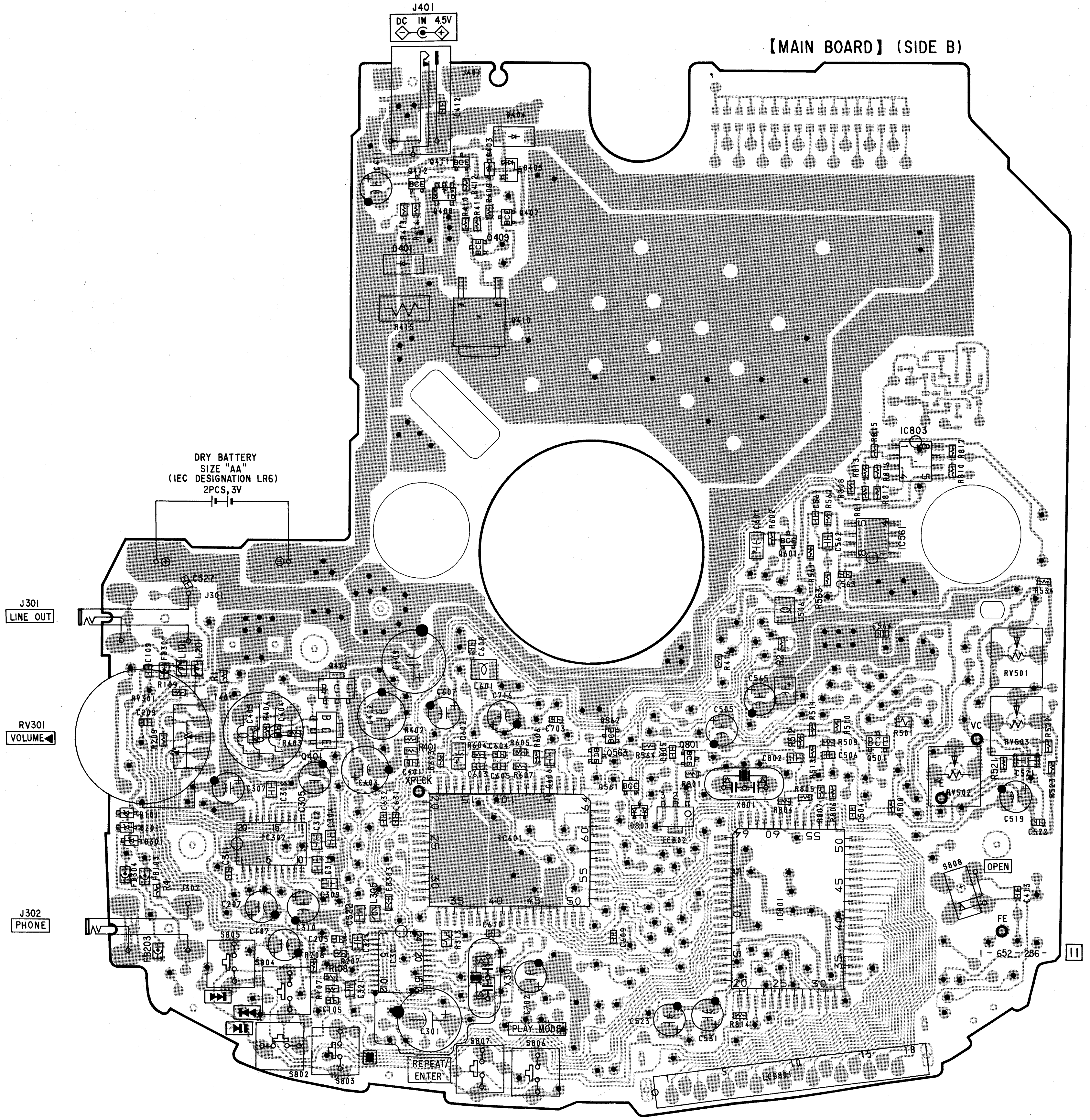

1
2
3
4
5
6
7
A
B
C
D
E
F
G
H
I
【MAIN BOARD】(SIDE A)
OPTICAL
PICK-UP BLOCK
KSM-331AAN(S)
FOCUS COIL
TRACKING COIL
B OUT
C OUT
NC
D OUT
R OUT
E OUT
VCC
VC
GND
F OUT
FLEXIBLE BOARD
S901
LIMIT SWITCH
ON : OPTICAL PICK-UP BLOCK REACHES INNER POSITION
S901
LS
M902
SLED MOTOR
M901
SPINDLE MOTOR
CN501
IC501
CN701
CN703
CN702
R507
C502
C503
RF
VC
TE
FE
TEST
OPNE
S801
HOLD→
C601
C701
C704
C715
L703
R708
R704
SLED
C529
C528
C535
R525
R526
R529
R531
R552
R516
R524

6	7	8	9	10	11	12	13	14	15	16	17	18	19



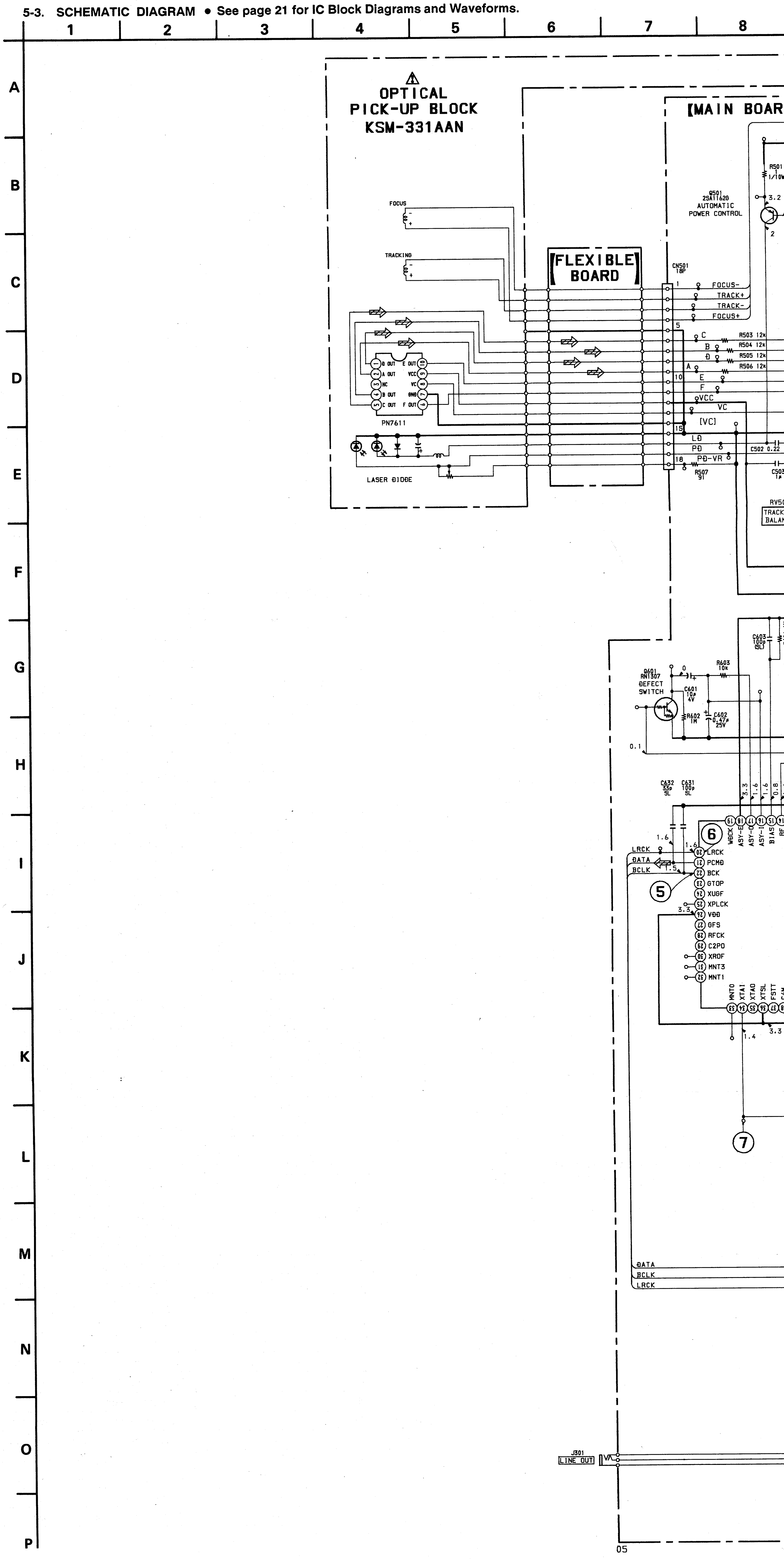
GND
VCC
VCPU
R3
S809
(R. BATT)
IC420
Q420
L420
IC701
CN701
CN703
C715
C801
R802
TEST
SLED
C701
L702
L703
L704
R303
C308
C317
C318
C303
C304
C306
C320
C325
Q101
Q201
S301
AVLS
OFF ← 1 ← 2
S302
BASS BOOST
NORM ← MID ← MAX
1 - 652 - 256 - 11

【MAIN BOARD】 (SIDE B)



J401
DC IN 4.5V
DRY BATTERY
SIZE "AA"
(IEC DESIGNATION LR6)
2PCS, 3V
J301
LINE OUT
RV301
VOLUME
J302
PHONE
C327
C412
C411
Q404
Q405
Q407
Q408
Q409
Q410
Q411
Q412
D401
R415
Q401
Q402
C401
C403
C404
C405
C409
R401
R402
R403
XPLCK
IC301
IC302
IC601
IC801
IC802
IC803
IC561
X301
X801
C301
C305
C307
C310
C311
L601
C601
Q601
Q801
Q501
C505
C565
C519
C523
C531
RV501
RV502
RV503
VC
TE
FE
S808
OPEN
S802
S803
S804
S805
S806
S807
PLAY MODE
REPEAT/
ENTER
LCD801
1 - 652 - 256 - 11

5-3. SCHEMATIC DIAGRAM • See page 21 for IC Block Diagrams and Waveforms.

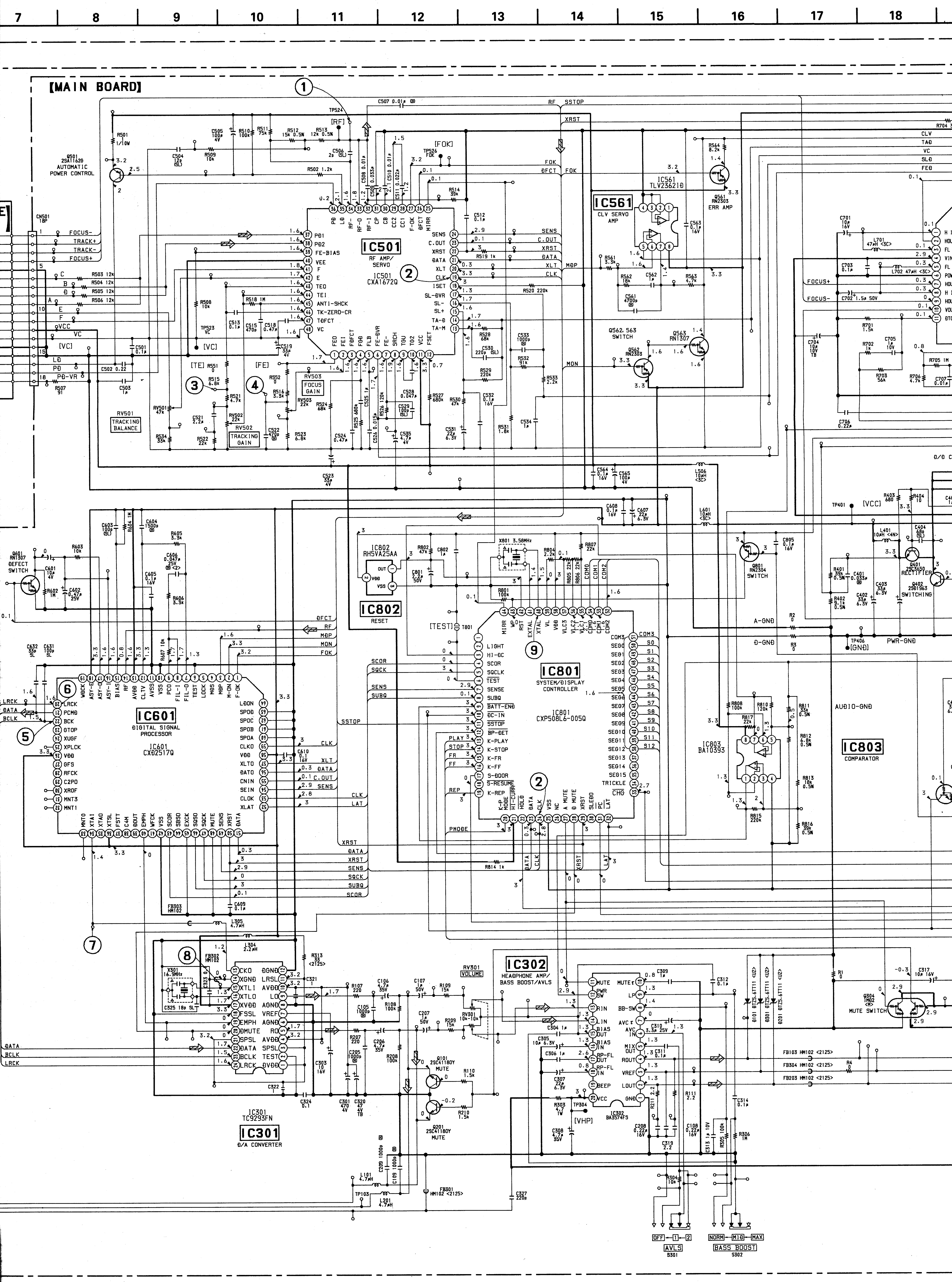

1
2
3
4
5
6
7
8
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
OPTICAL PICK-UP BLOCK KSM-331AAN
FOCUS
TRACKING
PN7611
LASER DIODE
FLEXIBLE BOARD
[MAIN BOARD
CN501 18P
FOCUS-
TRACK+
TRACK-
FOCUS+
R503 12k
R504 12k
R505 12k
R506 12k
VCC
VC
[VC]
LD
PD
PD-VR
R507 91
C502 0.22
Q501 2SA1162G AUTOMATIC POWER CONTROL
R501 1/10W
3.2
Q601 RN1307 DEFECT SWITCH
C601 10μ 4V
R602 1M
C602 0.47μ 25V
R603 10k
C603 100p (SL)
C632 33p SL
C631 100p SL
LRCK
DATA
BCLK
PCMD
BCK
GTOP
XUGF
XPLCK
VDD
GFS
RFCK
C2PO
XROF
MNT3
MNT1
MNT0
XTAI
XTAO
XTSL
FSTT
WDCK
ASY-E
ASY-O
ASY-I
BIAS
RF
J301 LINE OUT
05

Note on Schematic Diagram:

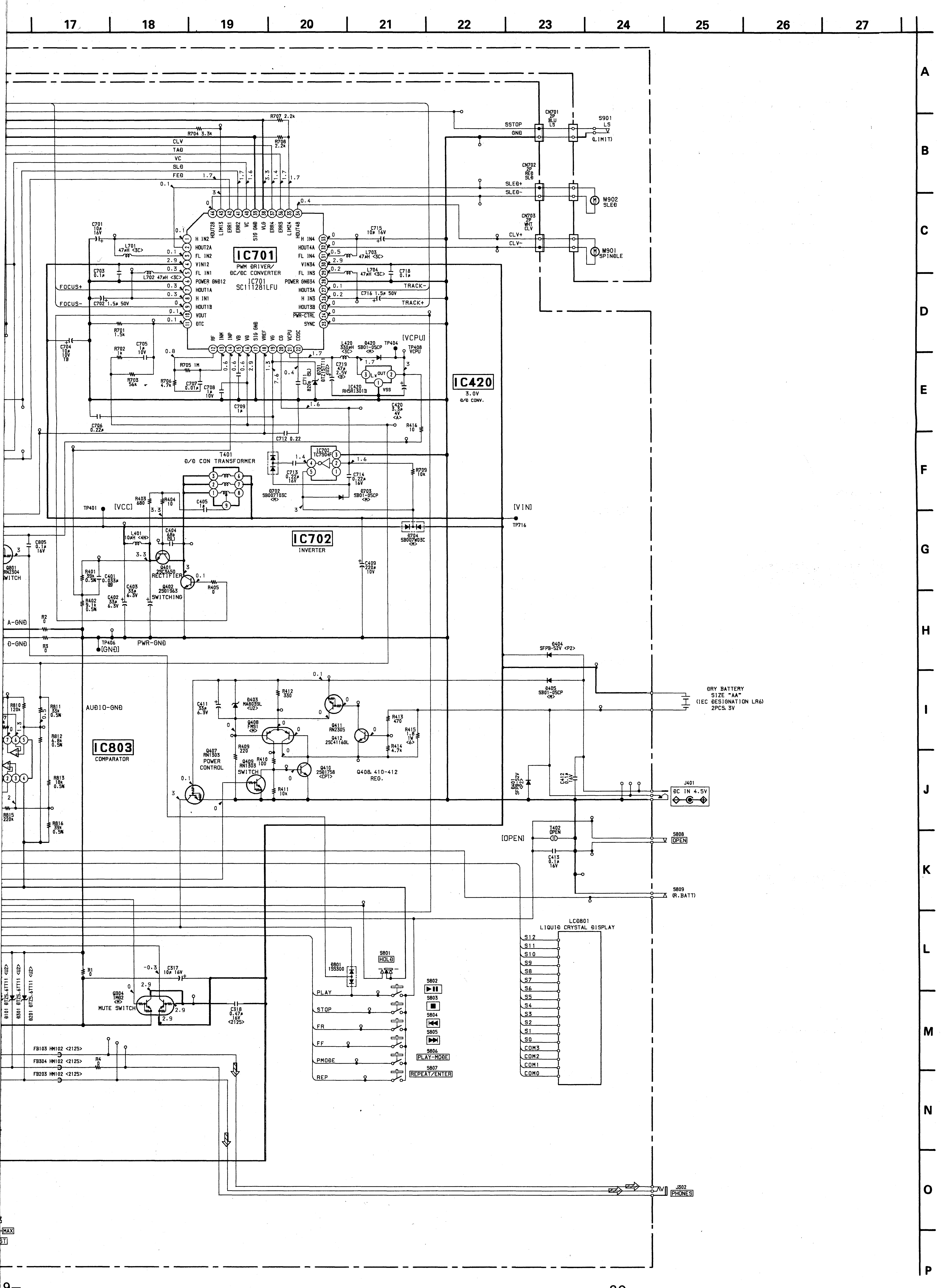
- All capacitors are in μF unless otherwise noted. pF: μμF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼ W or less unless otherwise specified.
- △ : internal component.

Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

- ▬ : B + Line.
- Power voltage is dc 3 V and fed with regulated dc power supply from BATT terminal.
- Voltages and waveforms are dc with respect to ground under no-signal conditions.
- Voltages are taken with a VOM (10 MΩ/V).
  Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope.
  Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  ⇨ : CD

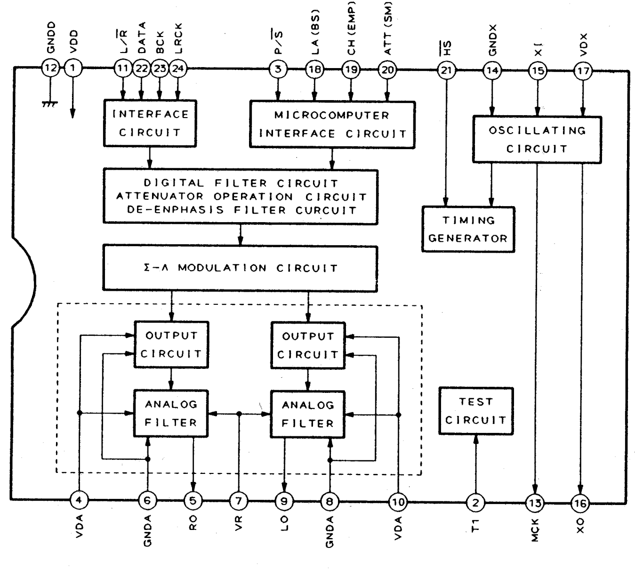


7
8
9
10
11
12
13
14
15
16
17
18
[MAIN BOARD]
IC501
RF AMP/ SERVO
IC501 CXA1672Q
IC561
CLV SERVO AMP
IC561 TLV2362ID
Q561 RN2303 ERR AMP
Q562, 563 SWITCH
Q501 2SA1162G AUTOMATIC POWER CONTROL
CN501 18P
FOCUS-
TRACK+
TRACK-
FOCUS+
RV501 TRACKING BALANCE
RV502 TRACKING GAIN
RV503 FOCUS GAIN
[RF]
[FOK]
[TE]
[FE]
[VC]
IC601
DIGITAL SIGNAL PROCESSOR
IC601 CXD2517Q
Q601 RN1307 DEFECT SWITCH
IC802 RH5VA25AA
IC802
RESET
X801 3.58MHz
[TEST] T801
IC801
SYSTEM/DISPLAY CONTROLLER
IC801 CXP50816-005Q
IC803 BA10393
IC803
COMPARATOR
AUDIO-GND
A-GND
D-GND
PWR-GND
TP406 [GND]
TP401 [VCC]
Q801 RN2304 SWITCH
Q401 2SC3650 RECTIFIER
Q402 2SD1963 SWITCHING
IC301 TC9293FN
IC301
D/A CONVERTER
X301 16.9MHz
Q101 2SC4118OY MUTE
Q201 2SC4118OY MUTE
RV301 VOLUME
IC302
HEADPHONE AMP/ BASS BOOST/AVLS
IC302 BA3574FS
[VHP]
Q304 IMD2 MUTE SWITCH
OFF-1-2
AVLS S301
NORM-MID-MAX
BASS BOOST S302
①
②
③
④
⑤
⑥
⑦
⑧
⑨

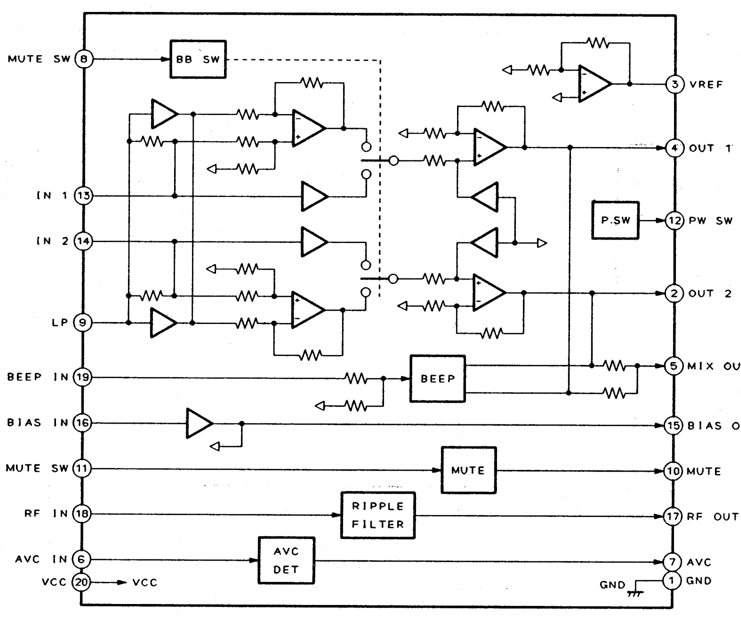

17
18
19
20
21
22
23
24
25
26
27
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
IC701
PWM DRIVER/
DC/DC CONVERTER
IC701
SC111281LFU
IC702
INVERTER
IC702
TC7S04F
IC420
3.0V
D/D CONV.
IC420
RH5RI301B
IC803
COMPARATOR
T401
D/D CON TRANSFORMER
CN701
2P
BLU
LS
CN702
2P
RED
SLD
CN703
2P
WHT
CLV
SSTOP
GND
SLED+
SLED-
CLV+
CLV-
S901
LS
(LIMIT)
M902
SLED
M901
SPINDLE
FOCUS+
FOCUS-
TRACK-
TRACK+
[VCPU]
TP404
TP408
VCPU
[VCC]
TP401
[VIN]
TP716
TP406
[GND]
A-GND
D-GND
PWR-GND
AUDIO-GND
Q401
2SC3650
RECTIFIER
Q402
2SD1963
SWITCHING
Q407
RN1303
POWER
CONTROL
Q409
RN1303
SWITCH
Q408
FMG1
Q410
2SD1758
Q411
RN2305
Q412
2SC4116GL
Q408, 410-412
REG.
Q304
IMD2
MUTE SWITCH
Q801
RN2304
SWITCH
D401
SFPB-52V
D404
SFPB-52V <P2>
D405
SB01-05CP
D403
MA8039L
D701
DTZ15TT11
D702
SB007T03C
D703
SB01-05CP
D704
SB007W03C
D420
SB01-05CP
D801
1SS300
D101 DTZ5.6TT11 <U2>
D301 DTZ5.6TT11 <U2>
D201 DTZ5.6TT11 <U2>
FB103 HM102 <2125>
FB304 HM102 <2125>
FB203 HM102 <2125>
DRY BATTERY
SIZE "AA"
(IEC DESIGNATION LR6)
2PCS. 3V
J401
DC IN 4.5V
T402
OPEN
[OPEN]
S808
OPEN
S809
(R.BATT)
J302
PHONES
LCD801
LIQUID CRYSTAL DISPLAY
S12
S11
S10
S9
S8
S7
S6
S5
S4
S3
S2
S1
S0
COM3
COM2
COM1
COM0
S801
HOLD
S802
S803
S804
S805
S806
PLAY-MODE
S807
REPEAT/ENTER
PLAY
STOP
FR
FF
PMODE
REP
MAX
HOUT2B
LIM13
ERR1
ERR2
VC
SIG GND
VLG
ERR4
ERR3
LIM24
HOUT4B
H IN2
HOUT2A
FL IN2
VIN12
FL IN1
POWER GND12
HOUT1A
H IN1
HOUT1B
VOUT
DTC
RF
INM
INP
VB
VD
SIG GND
VREF
VG
CG
VCPU
COSC
H IN4
HOUT4A
FL IN4
VIN34
FL IN3
POWER GND34
HOUT3A
H IN3
HOUT3B
PWR-CTRL
SYNC
CLV
TAD
VC
SLD
FED
R707 2.2k
R704 3.3k
R708 2.2k
C701 10µ 16V
L701 47µH <3C>
C703 0.1µ
L702 47µH <3C>
C702 1.5µ 50V
R701 1.5k
C704 10µ 10V TB
R702 1k
C705 1µ 10V
R703 56k
R706 4.7k
R705 1M
C707 0.01µ
C708 1µ 10V
C709 1µ
C706 0.22µ
C712 0.22
C711 820p (SL)
C715 10µ 16V
L703 47µH <3C>
L704 47µH <3C>
C718 0.1µ
C716 1.5µ 50V
L420 330µH <3C>
C719 47µ 2.5V <B>
C420 3.3µ 4V <A>
R416 10
C713 0.22µ 16V
C714 0.22µ 16V
R709 10k
R403 680
R404 10
C405 1µ
L401 10µH <4N>
C404 68p (SL)
C805 0.1µ 16V
R401 39k 0.5%
C401 0.033µ
C403 33µ 6.3V
C402 33µ 6.3V
R402 9.1k 0.5%
R405 0
C409 220µ 10V
R2 0
R3 0
R412 330
C411 33µ 6.3V
R413 470
R415 1.8 1W <6>
R414 4.7k
R409 220
R410 100
R411 10k
R810 120k
R811 33k 0.5%
R812 6.8k 0.5%
R813 18k 0.5%
R815 220k
R816 39k 0.5%
C412 0.1µ 16V
C413 0.1µ 16V
R1 0
C317 10µ 16V
C318 0.47µ 16V <2125>
R4 0

• IC Block Diagrams

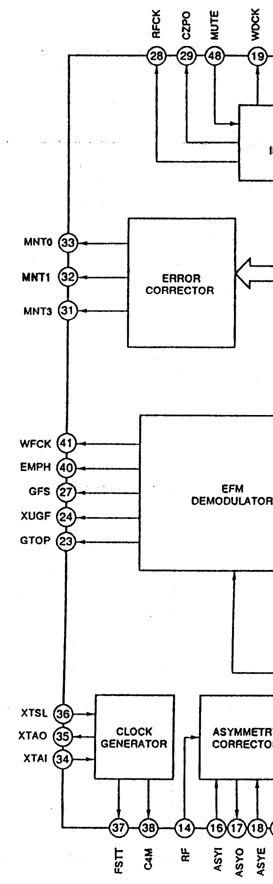
IC301 TC9293FN-EL


GNDD
VDD
L/R̄
DATA
BCK
LRCK
P/S̄
LA (BS)
CH (EMP)
ATT (SM)
HS̄
GNDX
XI
VDX
INTERFACE CIRCUIT
MICROCOMPUTER INTERFACE CIRCUIT
OSCILLATING CIRCUIT
DIGITAL FILTER CIRCUIT
ATTENUATOR OPERATION CIRCUIT
DE-ENPHASIS FILTER CURCUIT
TIMING GENERATOR
Σ-Δ MODULATION CIRCUIT
OUTPUT CIRCUIT
OUTPUT CIRCUIT
ANALOG FILTER
ANALOG FILTER
TEST CIRCUIT
VDA
GNDA
RO
VR
LO
GNDA
VDA
T1
MCK
XO

IC302 BA3574FS-T1

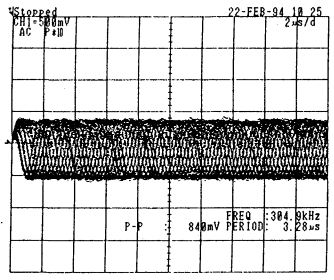

MUTE SW
IN 1
IN 2
LP
BEEP IN
BIAS IN
MUTE SW
RF IN
AVC IN
VCC
VCC
BB SW
P.SW
BEEP
MUTE
RIPPLE FILTER
AVC DET
VREF
OUT 1
PW SW
OUT 2
MIX OUT
BIAS OUT
MUTE
RF OUT
AVC
GND
GND

IC601 CXD2517Q

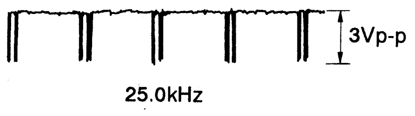

RFCK
CZPO
MUTE
WDCK
MNT0
MNT1
MNT3
ERROR CORRECTOR
WFCK
EMPH
GFS
XUGF
GTOP
EFM DEMODULATOR
XTSL
XTAO
XTAI
CLOCK GENERATOR
ASYMMETR
CORRECTO
FSTT
C4M
RF
ASYI
ASYO
ASYE

• Waveforms

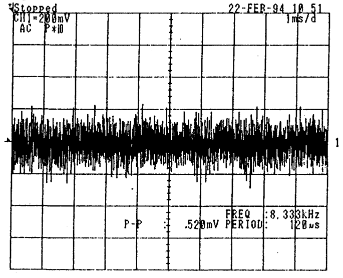
❶ TP RF 500 mV/DIV 2 μs/DIV



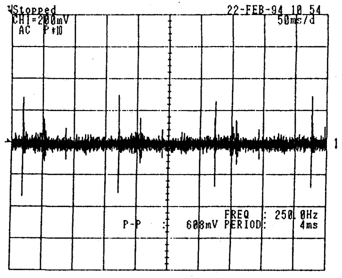
❷ IC501 ⑲
IC801 ㉔



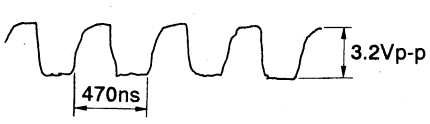
❸ TP TE 200mV/DIV 1ms/DIV



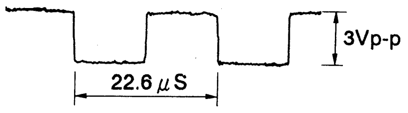
❹ TP FE 200V/DIV 50ms/DIV



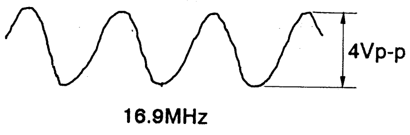
❺ IC601 ㉒



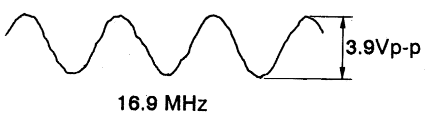
❻ IC601 ⑳



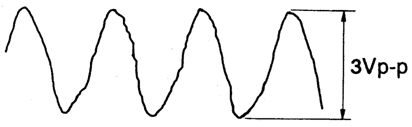
❼ IC601 ㉞



❽ IC301 ⑮



❾ IC801 (60)

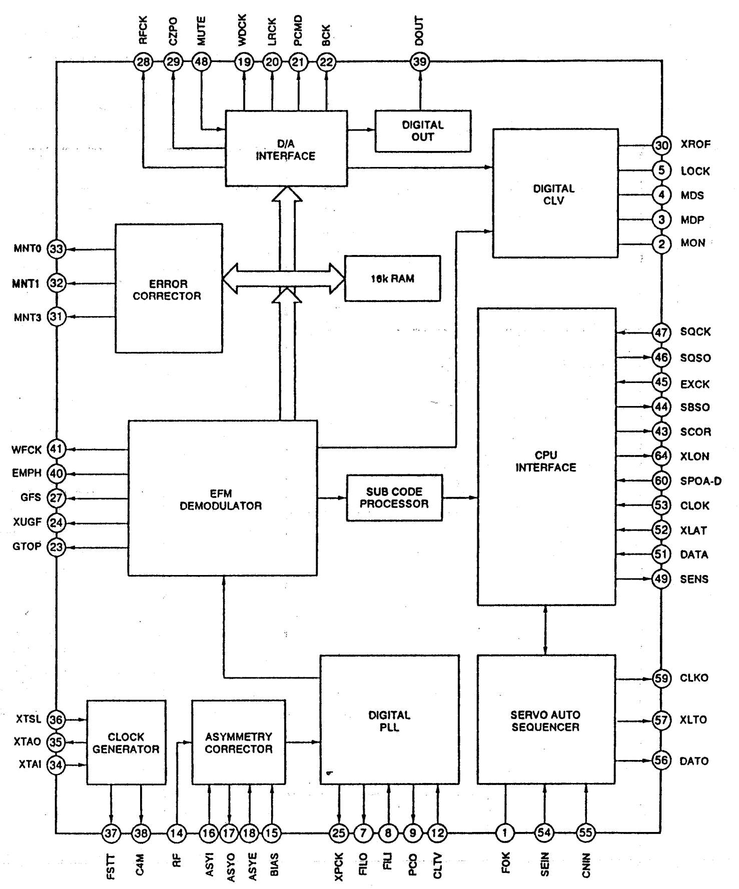


• IC Pin Description

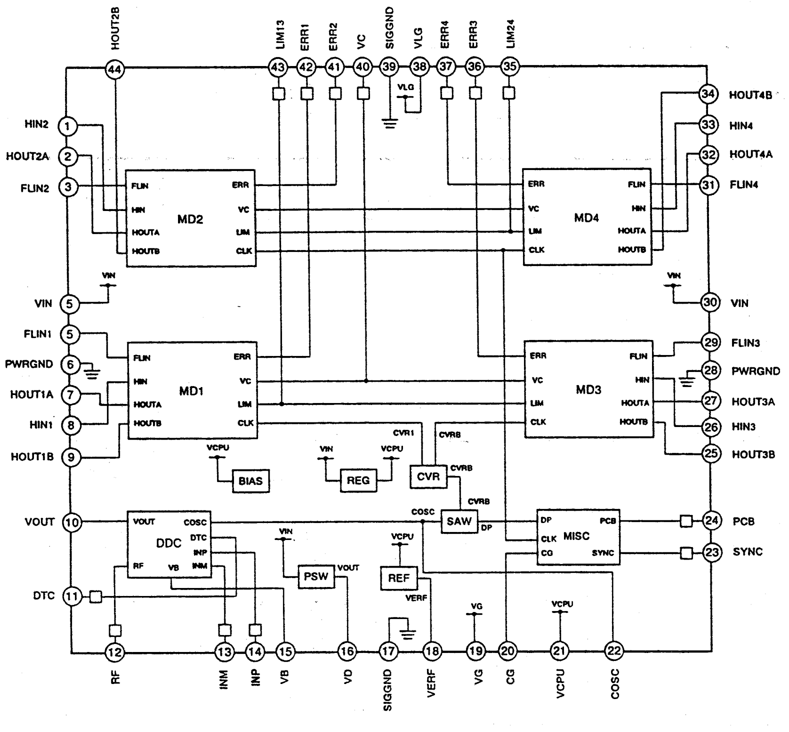
IC601 CXD2517Q

Pin No.	Pin Name	I/O	
1	FOK	I	Focus OK input t
2	MON	O	ON/OFF control
3	MDP	O	Servo control for
4	MDS	—	Not used
5	LOCK	—	Not used
6	TEST	I	Test terminal. No
7	FILO	O	Filter output for
8	FILI	I	Filter output for
9	PCO	O	Charge pump ou
10	Vss	—	GND
11	AVss	—	Analog GND
12	CLTV	I	VCO control vol
13	AVDD	—	Analog power so
14	RF	I	EFM signal inpu
15	BIAS	I	Asymmetry circu
16	ASYI	I	Asymmery comp
17	ASYO	O	EFM full swing
18	ASYE	I	L: Asymmery cir
19	WDCK	—	Not used
20	LRCK	O	D/A interface. L
21	PCMD	O	D/A interface. Se
22	BCK	O	D/A interface. Bi
23	GTOP	—	Not used
24	XUGF	—	Not used
25	XPCK	—	Not used
26	VDD	—	Power source (+
27	GFS	—	Not used
28	RFCK	—	Not used
29	C2PO	—	Not used
30	XROF	—	Not used
31	MNT3	—	Not used
32	MNT1	—	Not used
33	MNT0	—	Not used
34	XTAI	I	Xtal oscillator cir
35	XTAO	—	Not used
36	XTSL	—	Not used
37	FSTT	—	Not used
38	C4M	—	Not used
39	DOUT	—	Not used
40	EMPH	O	H output when pl

IC601 CXD2517Q


RFCK
C2PO
MUTE
WDCK
LRCK
PCMD
BCK
DOUT
D/A INTERFACE
DIGITAL OUT
XROF
LOCK
MDS
MDP
MON
DIGITAL CLV
MNT0
MNT1
MNT3
ERROR CORRECTOR
16k RAM
SQCK
SQSO
EXCK
SBSO
SCOR
XLON
SPOA-D
CLOK
XLAT
DATA
SENS
CPU INTERFACE
WFCK
EMPH
GFS
XUGF
GTOP
EFM DEMODULATOR
SUB CODE PROCESSOR
CLKO
XLTO
DATO
XTSL
XTAO
XTAI
CLOCK GENERATOR
ASYMMETRY CORRECTOR
DIGITAL PLL
SERVO AUTO SEQUENCER
FSTT
C4M
RF
ASYI
ASYO
ASYE
BIAS
XPCK
FILO
FILI
PCO
CLTV
FOK
SEIN
CNIN

IC701 SC111281LFU

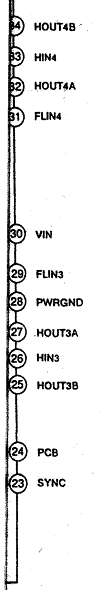

HOUT2B
LIM13
ERR1
ERR2
VC
SIGGND
VLG
ERR4
ERR3
LIM24
HIN2
HOUT2A
FLIN2
MD2
MD4
HOUT4B
HIN4
HOUT4A
FLIN4
VIN
FLIN1
PWRGND
HOUT1A
HIN1
HOUT1B
MD1
MD3
FLIN3
PWRGND
HOUT3A
HIN3
HOUT3B
BIAS
REG
CVR
SAW
DDC
MISC
PSW
REF
VOUT
DTC
PCB
SYNC
RF
INM
INP
VB
VD
SIGGND
VERF
VG
CG
VCPU
COSC

I/O	Description
I	Focus OK input terminal. This is used for SENS output and servo auto sequencer
O	ON/OFF control output for spindle motor
O	Servo control for spindle motor
—	Not used
—	Not used
I	Test terminal. Normally this is used for GND
O	Filter output for master PLL (Slave = digital PLL)
I	Filter output for master PLL
O	Charge pump output for master PLL
—	GND
—	Analog GND
I	VCO control voltage output for master
—	Analog power source (+5 V)
I	EFM signal input
I	Asymmetry circuit constant current input
I	Asymmery comparator voltage input
O	EFM full swing output (L=Vss, H=VDD)
I	L: Asymmery circuit OFF, H: Asymmery circuit is ON
—	Not used
O	D/A interface. LR clock f=Fs
O	D/A interface. Serial data (2's COMP, MSB fast)
O	D/A interface. Bit clock
—	Not used
—	Not used
—	Not used
—	Power source (+5 V)
—	Not used
—	Not used
—	Not used
—	Not used
—	Not used
—	Not used
—	Not used
I	Xtal oscillator circuit input of 16.934 MHz or 33.8688 MHz input
—	Not used
—	Not used
—	Not used
—	Not used
—	Not used
O	H output when playing disc has emphasis

Pin No.	Pin Name	I/O	Description
41	WFCK	—	Not used
42	Vss	—	GND
43	SCOR	O	H output when either sub-code Sync S0 or S1 is detected
44	SBSO	—	Not used
45	EXCK	—	Not used
46	SQSO	O	Serial output of subQ 80 bit
47	SQCK	I	Clock input for SQSO read out
48	MUTE	I	H: Mute, L: Reset
49	SENS	O	SENS output. Output for CPU
50	XRST	I	System reset. Reset with L.
51	DATA	I	Serial data input from CPU
52	XLAT	I	Latch input from CPU. This latches the serial data in trailing edge
53	CLOK	I	Serial data transmission clock input from CPU
54	SEIN	I	Sense input from SSP
55	CNIN	I	Track jump couting signal input
56	DATO	O	Serial data output for SSP
57	XLTO	O	Ssrial data latch output for SSP. This latches the serial data in trailing edge
58	VDD	—	Power source (+5 V)
59	CLKO	O	Serial data transmission clock output for SSP
60	SPOA	—	Not used
61	SPOB	—	Not used
62	SPOC	—	Not used
63	SPOD	—	Not used
64	LDON	—	Not used

Note)

- PCMD is 2's complement output of MSB fast.
- GTOP monitors the protection status of Frame Sync. (H : Sync protection window is released.)
- XUGF is a Frame Sync obtained from EFM signal and is a negative pulse. This is a signal before the Sync is protected.
- XPLCK is reversed rotation of the clock of EFN PLL. PLL is mode so that the changing points of the EFM signal an become same point.
- GFS signal is a signal which becomes "H" when the Frame Sync and the interpolation protection timing coincide.
- RFCK is a 136 μ frequency signal obtained with Xtal precision.
- C2PO is a signal which indicates an error status of the data.
- XRAOF is a signal which is generated when 16 K RAM exceeeds ± 4 F of the jitter margin.



Description
either sub-code Sync S0 or S1 is detected
subQ 80 bit
SQSO read out
set
utput for CPU
eset with L.
ut from CPU
m CPU. This latches the serial data in trailing edge
smission clock input from CPU
m SSP
uting signal input
put for SSP
h output for SSP. This latches the serial data in trailing edge
+5 V)
smission clock output for SSP

ync protection window is released.)
negative pulse. This is a signal before the Sync is protected.
LL is mode so that the changing points of the EFM signal and the trailin edge

Sync and the interpolation protection timing coincide.
sion.

xceeds ± 4 F of the jitter margin.

IC801 CXP508L6-005Q

Pin No.	Pin Name	I/O	Description	
1	NC	–	Not used.	
2	LIGHT	–	Not used.	
3	HI-DC	I	Input terminal detecting overvoltage of DC-IN. “H”: Overvoltage	
4	SCOR	I	Input terminal of CXD2517Q (IC601) SCOR signal output.	
5	SQCLK	O	Clock signal output terminal to input SUB-Q signal from CXD2517Q (IC601).	
6	TEST	I	Test mode with “L” level input in system reset.	
7	SENSE	I	Input terminal of SENSE signal output of CXD2517Q (IC601).	
8	SUBQ	I	Input terminal to input SUB-Q signal from CXD2517Q (IC601).	
9	BATT-END	I	Input terminal detecting electric subtruction of battery. “L”: EMPTY. Stop the set if EMPTY status lasts for 10 seconds in PLAY.	
10	DC-IN	I	Input terminal detecting DC-IN. “L”: With DC-IN. “H”: Without DC-IN.	
11	SSTOP	I	Limit switch (S901) input terminal. Switch ON with “L”.	
12	BP-DET	I	Input signal of rechargeable battery (BP-DM10) connection detecting switch (S809). “L”: With rechargeable battery.	
13	K-PLAY	I	PLAY switch (S802) input terminal.	Switch ON with “L”.
14	K-STOP	I	STOP switch (S803) input terminal.	
15	K-FR	I	FR switch (S804) input terminal.	
16	K-FF	I	FF switch (S805) input terminal.	
17	S-DOOR	I	DOOR switch (S808) input terminal. “H”: OPEN, “L”: CLOSE	
18			Not used.	
19	K-REP	I	REPEAT/ENTER switch (S807) input terminal.	Switch ON with “L”.
20	K-PMODE	I	PLAY MODE switch (S806)input terminal.	
21	HI-CURR	I	DC/DC converter output short detecting input terminal. Set P-CON ㉛ output to H with “H→L”.	
22	HOLD	I	HOLD switch input (S801). HOLD with “L”.	
23	DATA	O	Serial data output terminal to CXD2517Q (IC601).	
24	CLK	O	Clock signal output terminal in forwarding serial data to CXD2517Q (IC601)	
25	VSS (GND)	–	Earthing terminal.	
26	NC	–	Not used.	
27	A MUTE	O	Analog mute control output terminal. “H”: Mute	
28	D MUTE	O	Mute control output termianl of TC9293FN-EL (IC301). “H”: Mute	
29	XRST	O	Reset signal output terminal to CXD2517Q (IC601), CXA1672Q (IC501) and TC9293FN- EL (IC301). Reset each IC with “L” level output.	
30	SLEDO	O	Output termianl controlling ON/OFF of sled output of CXA1672Q (IC501). “L”: ON, “H”: OFF. Not used.	
31	P-CON	O	Output terminal controlling power supply. “L”: Power ON, “H”: Power OFF.	
32	LAT (CH)	O	Latch signal output terminal in forwarding serial data to CXD2517Q (IC601)	
33	CHG	O	Battery (BP-DM10) charging control output terminal. In charging “L”.	
34-37			Not used.	
38-50	SEG12-SEG0	O	Segment signal output terminal.	
51-54	COM3-COM0	0	Common signal output terminal (Quarter indication)	
55-57	VLC1-VLC3	–	Supply terminal of LCD bias power supply.	
58	VDD	–	Power supply terminal.	
59	VL	–	Controlling terminal to cut off the current flowing LCD bias resistance in ST-BY.	
60	XTAL	O	Output terminal of clock oscillating circuit.	
61	EXTAL	I	Input terminal of clock oscillating circuit.	
62	RST	I	System reset input. Reset with “L” level.	
63	WP	I	Wake-up input. Wake up with L→H.	
64	MIRR	I	MIRR signal monitor input of IC501.	

SECTION 6

EXPLODED VIEWS

NOTE:

- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Color Indication of Appearance Parts
  Example:
  KNOB, BALANCE (WHITE) . . . (RED)
  ↑ ↑
  Parts Color Cabinet's Color

- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.

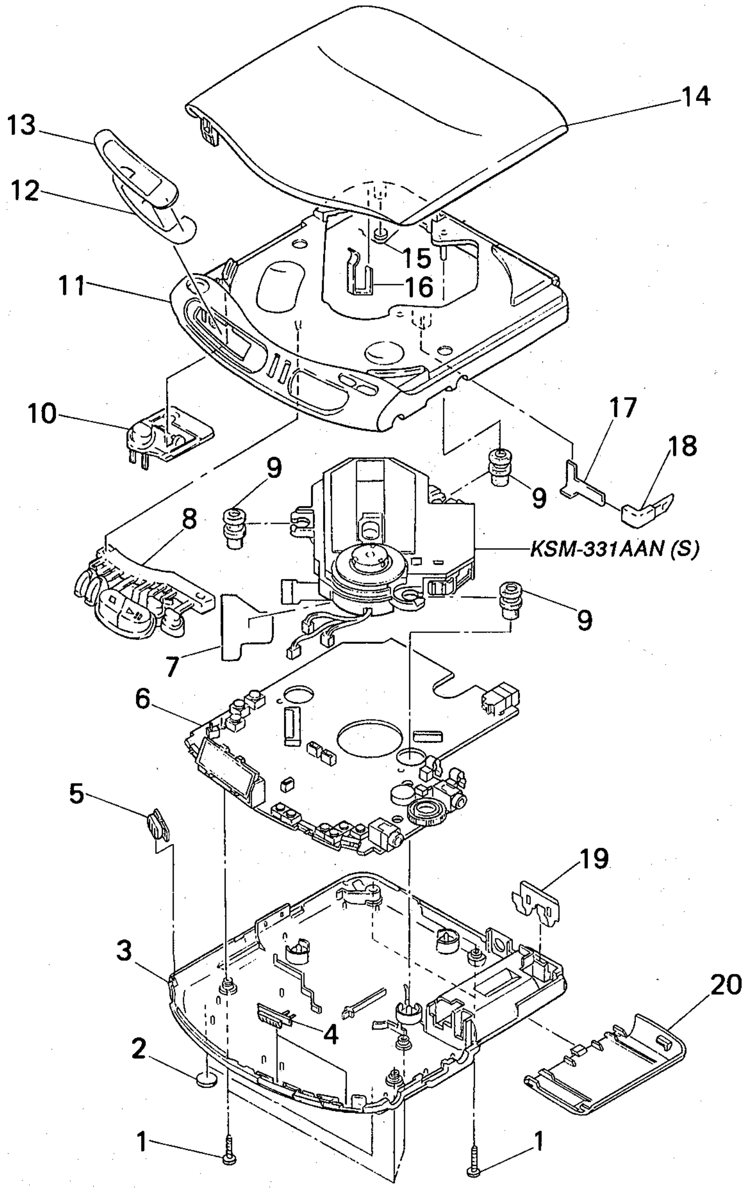
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le neméro spécifié.

- DESTINATION

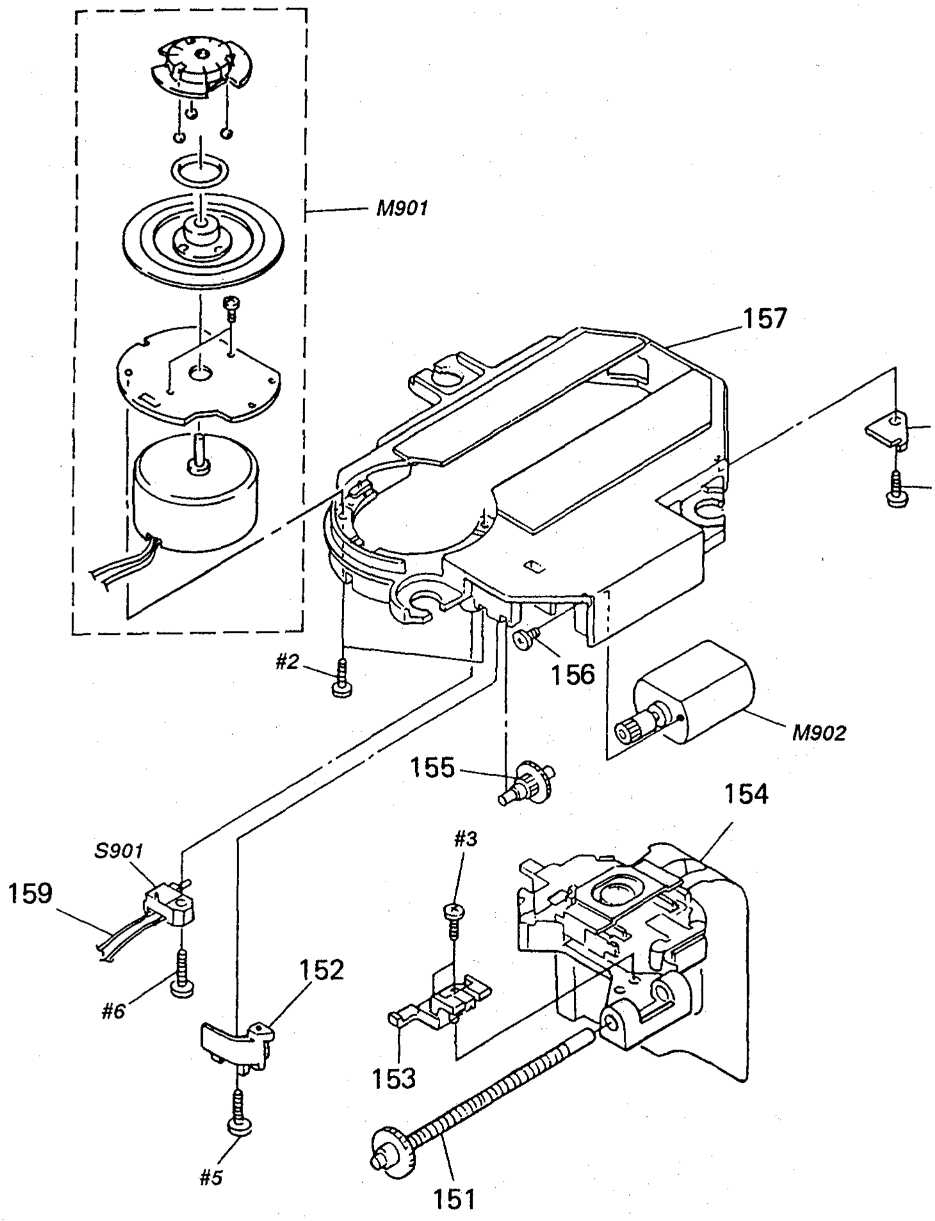
CA: Canadian	EA: Saudi Arabia	G: German	PA: Panama	E33: AC100-240V area model
AU: Australian	FR: French	MX: Mexican	E13: AC220-230V area model	E92: AC120V area model

(1) CABINET SECTION



Ref. No.	Part No.	Description	Remark
1	4-958-597-01	SCREW	
2	4-966-278-01	FOOT, RUBBER	
3	4-966-034-01	CABINET (REAR) (BLACK)... (BLACK, GREEN, BLUE) (D-131:CA, AEP, E13, E33, PA, E92, G, EA, AU, FR, MX, UK)	
3	4-966-034-11	CABINET (REAR) (GREY)... (RED) (D-131:CA, AEP, E13, E33, PA, E92, G, EA, AU, FR, MX, UK)	
3	4-966-637-01	CABINET (REAR) (BLACK)... (BLACK) (D-131:US)	
3	4-966-637-41	CABINET (REAR) (BLACK)... (BLACK) (D-130)	
4	4-965-552-01	KNOB (A-B) (BLACK)... (BLACK, GREEN, BLUE)	
4	4-965-552-11	KNOB (A-B) (GREY)... (RED) (D-131:CA, AEP, E13, E33, PA, E92, G, EA, AU, FR, MX, UK)	
5	4-965-553-01	KNOB (HOLD) (BLACK)... (BLACK, GREEN, BLUE)	
5	4-965-553-11	KNOB (HOLD) (GREY)... (RED) (D-131:CA, AEP, E13, E33, PA, E92, G, EA, AU, FR, MX, UK)	
6	A-3276-336-A	MAIN BOARD, COMPLETE	
* 7	4-956-818-11	RETAINER, FLEXIBLE	
8	4-965-545-01	BUTTON (OPE) (BLACK)... (BLACK, GREEN, BLUE)	
8	4-965-545-11	BUTTON (OPE) (GREY)... (RED) (D-131:CA, AEP, E33, E92, G, EA, AU, FR, MX, UK)	
9	4-962-370-01	INSULATOR	
10	4-965-546-01	BUTTON (OPEN) (BLACK)... (BLACK, GREEN, BLUE)	
10	4-965-546-11	BUTTON (OPEN) (GREY)... (RED) (D-131:CA, AEP, E33, E92, G, EA, AU, FR, MX, UK)	
11	4-965-544-01	CABINET (FRONT) (BLACK)... (BLACK, GREEN, BLUE) (D-131:CA, AEP, E13, E33, PA, E92, G, EA, AU, FR, MX, UK)	
11	4-965-544-11	CABINET (FRONT) (GREY)... (RED) (D-131:CA, AEP, E33, E92, G, EA, AU, FR, MX, UK)	
11	4-966-638-01	CABINET (FRONT) (BLACK) (D-130/D-131:US)	
12	4-965-559-01	SHEET, ADHESIVE, DOUBLE-FACE	
13	4-965-557-01	WINDOW (LCD)	
14	4-965-556-01	LID, UPPER (BLACK) (D-131:CA, AEP, E33, E92, G, EA, AU, FR, MX, UK)	
14	4-965-556-11	LID, UPPER (RED) (D-131:CA, AEP, E33, E92, G, EA, AU, FR, MX, UK)	
14	4-965-556-21	LID, UPPER (GREEN) (D-131:CA, AEP, E33, E92, G, EA, AU, FR, MX, UK)	
14	4-965-556-31	LID, UPPER (BLUE) (D-131:CA, AEP, E33, E92, G, EA, AU, FR, MX, UK)	
14	4-965-556-41	LID, UPPER (BLACK) (D-131:PA)	
14	4-965-556-91	LID, UPPER (BLACK) (D-131:E13)	
14	4-966-639-01	LID, UPPER (BLACK) (D-131:US)	
14	4-966-639-41	LID, UPPER (BLACK) (D-130)	
15	4-966-430-01	SPRING, TORSION	
16	4-965-549-01	SPRING (U. LID)	
17	4-965-548-01	SPRING (D)	
18	4-965-547-01	SEPARATOR	
19	4-965-555-01	TERMINAL BOARD (RELAY), BATTERY	
20	4-965-558-01	LID, BATTERY CASE (BLACK)... (BLACK, GREEN, BLUE)	
20	4-965-558-11	LID, BATTERY CASE (GREY)... (RED) (D-131:CA, AEP, E33, E92, G, EA, AU, FR, MX, UK)	

(2) OPTICAL PICK-UP BLOCK SECTION (KSM-331AAN (S))



Ref. No.	Part No.	Description	Remark
151	X-2625-483-1	SCREW ASSY, SLED	
152	2-625-412-02	SPRING, SLED	
153	2-625-414-02	RACK	
⚠154	8-848-289-11	DEVICE, OPTICAL (KSS-331A)	
155	2-625-410-01	GEAR (B)	
156	3-732-988-01	SCREW (M2X2.5)	
157	2-625-415-02	CHASSIS, MD	
158	2-625-411-01	RETAINER, SHAFT	
159	1-948-418-21	HARNESS	
M901	X-2625-485-1	MOTOR ASSY, T.T. (SPINDLE)	

Ref. No.	Part No.	Description	Remark
M902	X-2626-171-2	MOTOR ASSY, SLED	
S901	1-570-771-11	SWITCH (LIMIT)	

****

HARDWE LIST

****

#2	7-627-552-48	SCREW, PRECISION +P1.7X4 TYPE 1
#3	7-627-852-17	SCREW, PRECISION +P1.7X4 TYPE 3
#5	7-685-104-19	SCREW (2X6), TAPPING (B)
#6	7-685-105-19	SCREW (2X8), TAPPING (B)

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Note: Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le neméro spécifié.

SECTION 7
ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL:Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F:nonflammable
- DESTINATION
  CA: Canadian
  AU: Australian
  EA: Saudi Arabia
  FR: French
  G: German
  MX: Mexican
  PA: Panama
  E13: AC220-230V area model
  E33: AC100-240V area model
  E92: AC120V area model
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u:μ, for example:
  uA..: μA.. uPA..: μPA..
  uPB..: μPB.. uPC..: μPC.. uPD..: μPD..
- CAPACITORS
  uF: μF
- COILS
  uH: μH

When indicating parts by reference number, please include the board.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description		Remark	
	A-3276-336-A	MAIN BOARD, COMPLETE			
		********************			
	4-965-550-01	HOLDER (LCD)			
	4-965-551-01	TERMINAL BOARD, BATTERY			
		< CAPACITOR >			
C105	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C106	1-126-603-11	ELECT CHIP	4.7uF	20%	35V
C107	1-126-160-11	ELECT	1uF	20%	50V
C108	1-165-128-11	CERAMIC CHIP	0.22uF		16V
C109	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C205	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C206	1-126-603-11	ELECT CHIP	4.7uF	20%	35V
C207	1-126-160-11	ELECT	1uF	20%	50V
C208	1-165-128-11	CERAMIC CHIP	0.22uF		16V
C209	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C301	1-128-110-11	ELECT	470uF	20%	4V
C303	1-124-779-00	ELECT CHIP	10uF	20%	16V
C304	1-164-234-11	CERAMIC CHIP	1uF		10V
C305	1-126-157-11	ELECT	10uF	20%	16V
C306	1-164-234-11	CERAMIC CHIP	1uF		10V
C307	1-126-153-11	ELECT	22uF	20%	6.3V
C308	1-126-603-11	ELECT CHIP	4.7uF	20%	35V
C309	1-164-234-11	CERAMIC CHIP	1uF		10V
C310	1-126-162-11	ELECT	3.3uF	20%	50V
C311	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C312	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C313	1-164-234-11	CERAMIC CHIP	1uF		10V
C314	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C317	1-124-779-00	ELECT CHIP	10uF	20%	16V
C318	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C319	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C320	1-104-708-11	TANTAL CHIP	47uF	20%	4V
C321	1-164-234-11	CERAMIC CHIP	1uF		10V
C322	1-164-234-11	CERAMIC CHIP	1uF		10V
C323	1-164-004-11	CERAMIC CHIP	0.1uF		25V
C324	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C325	1-162-944-11	CERAMIC CHIP	18PF	5%	50V
C327	1-163-189-00	MELF	220PF	10%	50V
C401	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C402	1-127-485-00	ELECT(SOLID)	33uF	20%	6.3V
C403	1-127-485-00	ELECT(SOLID)	33uF	20%	6.3V
C404	1-162-951-11	CERAMIC CHIP	68PF	5%	50V
C405	1-164-234-11	CERAMIC CHIP	1uF		10V
C409	1-126-176-11	ELECT	220uF	20%	10V
C411	1-126-784-11	ELECT	33uF	20%	6.3V
C412	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C413	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C420	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C501	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C502	1-165-128-11	CERAMIC CHIP	0.22uF		16V
C503	1-164-234-11	CERAMIC CHIP	1uF		10V
C504	1-162-942-11	CERAMIC CHIP	12PF	5%	50V
C505	1-124-584-00	ELECT	100uF	20%	10V
C506	1-162-932-11	CERAMIC CHIP	2PF	0.25PF	50V
C507	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C508	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C509	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C510	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C511	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C512	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C513	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C515	1-162-962-11	CERAMIC CHIP	470P	10%	50V
C518	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C519	1-126-784-11	ELECT	33uF	20%	4V
C521	1-164-337-11	CERAMIC CHIP	2.2uF		16V
C522	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C523	1-126-784-11	ELECT	33uF	20%	4V
C524	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C525	1-164-234-11	CERAMIC CHIP	1uF		10V
C526	1-164-245-11	CERAMIC CHIP	0.015uF	10%	25V
C528	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C529	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C530	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C531	1-126-153-11	ELECT	22uF	20%	6.3V
C532	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C533	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C534	1-164-234-11	CERAMIC CHIP	1uF		10V

MAIN

Ref. No.	Part No.	Description			Remark
C535	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V
C561	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C562	1-164-234-11	CERAMIC CHIP	1uF		10V
C563	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C564	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C565	1-124-584-00	ELECT	100uF	20%	10V
C601	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C602	1-135-145-11	TANTALUM CHIP	0.47uF	10%	35V
C603	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C604	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C605	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C606	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C607	1-126-153-11	ELECT	22uF	20%	6.3V
C608	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C609	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C610	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C631	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C632	1-162-947-11	CERAMIC CHIP	33PF	5%	50V
C701	1-124-779-00	ELECT CHIP	10uF	20%	16V
C702	1-124-256-00	ELECT	1.5uF	20%	50V
C703	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C704	1-135-216-11	TANTAL CHIP	10uF	20%	10V
C705	1-164-234-11	CERAMIC CHIP	1uF		10V
C706	1-165-128-11	CERAMIC CHIP	0.22uF		16V
C707	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C708	1-164-234-11	CERAMIC CHIP	1uF		10V
C709	1-164-234-11	CERAMIC CHIP	1uF		10V
C711	1-164-473-11	CERAMIC CHIP	820PF	5%	50V
C712	1-165-128-11	CERAMIC CHIP	0.22uF		16V
C713	1-165-128-11	CERAMIC CHIP	0.22uF		16V
C714	1-165-128-11	CERAMIC CHIP	0.22uF		16V
C715	1-124-779-00	ELECT CHIP	10uF	20%	16V
C716	1-124-256-00	ELECT	1.5uF	20%	50V
C718	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C719	1-107-493-11	TANTAL. CHIP	47uF	20%	2.5V
C801	1-126-601-11	ELECT CHIP	2.2uF	20%	50V
C802	1-164-234-11	CERAMIC CHIP	1uF		10V
C805	1-164-360-11	CERAMIC CHIP	0.1uF		16V
		< CONNECTOR >			
CN501	1-566-534-11	CONNECTOR, FPC (ZIF) 18P			
* CN701	1-695-320-51	PIN, CONNECTOR (1.5MM) (SMD) 2P			
* CN702	1-695-320-31	PIN, CONNECTOR (1.5MM) (SMD) 2P			
* CN703	1-695-320-21	PIN, CONNECTOR (1.5MM) (SMD) 2P			
		< DIODE >			
D101	8-719-978-23	DIODE	DTZ5.6-TT11		
D201	8-719-978-23	DIODE	DTZ5.6-TT11		
D301	8-719-978-23	DIODE	DTZ5.6-TT11		

Ref. No.	Part No.	Description		Remark
D401	8-719-313-73	DIODE	SFPB-52	
D403	8-719-422-16	DIODE	MA8039-L-TX	
D404	8-719-313-73	DIODE	SFPB-52	
D405	8-719-938-72	DIODE	SB01-05CP	
D420	8-719-938-72	DIODE	SB01-05CP	
D701	8-719-978-63	DIODE	DTZ15-TT11	
D702	8-719-989-73	DIODE	SB007T03C	
D703	8-719-938-72	DIODE	SB01-05CP	
D704	8-719-986-76	DIODE	SB007W03C	
D801	8-719-024-81	DIODE	1SS300-TE85L	
		< FERRITE BEAD >		
FB103	1-414-235-11	INDUCTOR, FERRITE BEAD		
FB203	1-414-235-11	INDUCTOR, FERRITE BEAD		
FB301	1-414-235-11	INDUCTOR, FERRITE BEAD		
FB302	1-414-235-11	INDUCTOR, FERRITE BEAD		
FB303	1-414-385-11	INDUCTOR, FERRITE BEAD		
FB304	1-414-235-11	INDUCTOR, FERRITE BEAD		
		< IC >		
IC301	8-759-263-31	IC	TC9293FN-EL	
IC302	8-759-263-12	IC	BA3574FS-T1	
IC420	8-759-263-13	IC	RH5RI301B-T1	
IC501	8-752-063-45	IC	CXA1672Q	
IC561	8-759-177-69	IC	TLV2362ID-ELL2500	
IC601	8-752-361-93	IC	CXD2517Q	
IC701	8-759-263-14	IC	SC111281LFU	
IC702	8-759-031-84	IC	SC7S04F	
IC801	8-752-854-62	IC	CXP508L6-005Q	
IC802	8-759-988-04	IC	RH5VA25AA	
IC803	8-759-510-73	IC	BA10393F-E2	
		< JACK >		
J301	1-565-287-41	JACK (LINE OUT)		
J302	1-565-287-11	JACK (PHONE)		
J401	1-691-099-11	JACK, DC (POLARITY UNIFIED TYPE) (DC IN 4.5V)		
		< COIL >		
L101	1-412-002-31	INDUCTOR CHIP	4.7uH	
L201	1-412-002-31	INDUCTOR CHIP	4.7uH	
L304	1-410-997-11	INDUCTOR CHIP	2.2uH	
L305	1-412-002-31	INDUCTOR CHIP	4.7uH	
L401	1-412-622-51	INDUCTOR	10uH	
L420	1-412-034-11	INDUCTOR CHIP	330uH	
L506	1-412-029-11	INDUCTOR CHIP	10uH	
L601	1-412-029-11	INDUCTOR CHIP	10uH	
L701	1-412-031-11	INDUCTOR CHIP	47uH	
L702	1-412-031-11	INDUCTOR CHIP	47uH	

Ref. No.	Part No.	Description	Remark
L703	1-412-031-11	INDUCTOR CHIP 47uH	
L704	1-412-031-11	INDUCTOR CHIP 47uH	

< LIQUID CRYSTAL DISPLAY >

Ref. No.	Part No.	Description	Remark
LCD801	1-810-495-11	DISPLAY PANEL, LIQUID CRYSTAL	

< TRANSISTOR >

Ref. No.	Part No.	Description	Remark
Q101	8-729-013-35	TRANSISTOR 2SC4118-OY-TE85L	
Q201	8-729-013-35	TRANSISTOR 2SC4118-OY-TE85L	
Q304	8-729-907-39	TRANSISTOR IMD2	
Q401	8-729-022-67	TRANSISTOR 2SC3650-TD	
Q402	8-729-923-36	TRANSISTOR 2SD1963-Q, R	
Q407	8-729-402-45	TRANSISTOR UN5212	
Q408	8-729-902-96	TRANSISTOR FMS1	
Q409	8-729-402-45	TRANSISTOR UN5212	
Q410	8-729-922-34	TRANSISTOR 2SD1758F5-QR	
Q411	8-729-014-22	TRANSISTOR RN2305-TE85L	
Q412	8-729-231-74	TRANSISTOR 2SC4116-GL	
Q501	8-729-216-22	TRANSISTOR 2SA1162-G	
Q561	8-729-014-18	TRANSISTOR RN2303-TE85L	
Q562	8-729-014-18	TRANSISTOR RN2303-TE85L	
Q563	8-729-014-04	TRANSISTOR RN1307-TE85L	
Q601	8-729-014-04	TRANSISTOR RN1307-TE85L	
Q801	8-729-403-35	TRANSISTOR UN5113	

< RESISTOR >

Ref. No.	Part No.	Description	Remark
R1	1-216-864-11	METAL CHIP 0 5% 1/16W	
R2	1-216-864-11	METAL CHIP 0 5% 1/16W	
R3	1-216-864-11	METAL CHIP 0 5% 1/16W	
R4	1-216-864-11	METAL CHIP 0 5% 1/16W	
R107	1-216-813-11	METAL CHIP 220 5% 1/16W	
R108	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R109	1-216-835-11	METAL CHIP 15K 5% 1/16W	
R110	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R111	1-216-789-11	METAL CHIP 2.2 5% 1/16W	
R207	1-216-813-11	METAL CHIP 220 5% 1/16W	
R208	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R209	1-216-835-11	METAL CHIP 15K 5% 1/16W	
R210	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R211	1-216-789-11	METAL CHIP 2.2 5% 1/16W	
R303	1-218-610-11	METAL CHIP 4.7 5% 1W	
R304	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R305	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R306	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R313	1-216-013-00	METAL CHIP 33 5% 1/10W	
R401	1-218-885-11	METAL CHIP 39K 0.50% 1/16W	
R402	1-218-870-11	METAL CHIP 9.1K 0.50% 1/16W	
R403	1-216-819-11	METAL CHIP 680 5% 1/16W	
R404	1-216-797-11	METAL CHIP 10 5% 1/16W	
R405	1-216-864-11	METAL CHIP 0 5% 1/16W	
R409	1-216-813-11	METAL CHIP 220 5% 1/16W	
R410	1-216-809-11	METAL CHIP 100 5% 1/16W	
R411	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R412	1-216-815-11	METAL CHIP 330 5% 1/16W	
R413	1-216-817-11	METAL CHIP 470 5% 1/16W	
R414	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R415	1-218-605-11	METAL CHIP 1.8 5% 1W	
R416	1-216-797-11	METAL CHIP 10 5% 1/16W	
R501	1-217-671-11	METAL CHIP 1 5% 1/10W	
R502	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	
R503	1-218-873-11	METAL CHIP 12K 0.50% 1/16W	
R504	1-218-873-11	METAL CHIP 12K 0.50% 1/16W	
R505	1-218-873-11	METAL CHIP 12K 0.50% 1/16W	
R506	1-218-873-11	METAL CHIP 12K 0.50% 1/16W	
R507	1-218-286-11	METAL GLAZE 91 5% 1/16W	
R508	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R509	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R510	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R511	1-218-296-11	METAL GLAZE 75K 5% 1/16W	
R512	1-218-875-11	METAL CHIP 15K 0.50% 1/16W	
R513	1-218-873-11	METAL CHIP 12K 0.50% 1/16W	
R514	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R515	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
R516	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R518	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R519	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R520	1-216-849-11	METAL CHIP 220K 5% 1/16W	
R521	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R522	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R523	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
R524	1-216-843-11	METAL CHIP 68K 5% 1/16W	
R525	1-216-855-11	METAL CHIP 680K 5% 1/16W	
R526	1-216-846-11	METAL CHIP 120K 5% 1/16W	
R527	1-216-855-11	METAL CHIP 680K 5% 1/16W	
R528	1-216-843-11	METAL CHIP 68K 5% 1/16W	
R529	1-216-849-11	METAL CHIP 220K 5% 1/16W	
R530	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R531	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	
R532	1-218-347-11	METAL GLAZE 91K 5% 1/16W	
R533	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R534	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R551	1-216-295-00	METAL CHIP 0 5% 1/10W	
R552	1-216-295-00	METAL CHIP 0 5% 1/10W	
R561	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R562	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R563	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	

MAIN

Ref. No.	Part No.	Description	Remark
R564	1-216-832-11	METAL CHIP 8.2K 5%	1/16W
R602	1-216-857-11	METAL CHIP 1M 5%	1/16W
R603	1-216-833-11	METAL CHIP 10K 5%	1/16W
R604	1-216-857-11	METAL CHIP 1M 5%	1/16W
R605	1-216-827-11	METAL CHIP 3.3K 5%	1/16W
R606	1-216-827-11	METAL CHIP 3.3K 5%	1/16W
R607	1-216-833-11	METAL CHIP 10K 5%	1/16W
R701	1-216-823-11	METAL CHIP 1.5K 5%	1/16W
R702	1-216-821-11	METAL CHIP 1K 5%	1/16W
R703	1-216-842-11	METAL CHIP 56K 5%	1/16W
R704	1-216-827-11	METAL CHIP 3.3K 5%	1/16W
R705	1-216-857-11	METAL CHIP 1M 5%	1/16W
R706	1-216-829-11	METAL CHIP 4.7K 5%	1/16W
R707	1-216-825-11	METAL CHIP 2.2K 5%	1/16W
R708	1-216-825-11	METAL CHIP 2.2K 5%	1/16W
R709	1-216-833-11	METAL CHIP 10K 5%	1/16W
R801	1-216-845-11	METAL CHIP 100K 5%	1/16W
R802	1-216-841-11	METAL CHIP 47K 5%	1/16W
R804	1-216-825-11	METAL CHIP 2.2K 5%	1/16W
R805	1-216-837-11	METAL CHIP 22K 5%	1/16W
R806	1-216-837-11	METAL CHIP 22K 5%	1/16W
R807	1-216-837-11	METAL CHIP 22K 5%	1/16W
R808	1-216-845-11	METAL CHIP 100K 5%	1/16W
R810	1-216-846-11	METAL CHIP 120K 5%	1/16W
R811	1-218-883-11	METAL CHIP 33K 0.50%	1/16W
R812	1-218-867-11	METAL CHIP 6.8K 0.50%	1/16W
R813	1-218-877-11	METAL CHIP 18K 0.50%	1/16W
R814	1-216-821-11	METAL CHIP 1K 5%	1/16W
R815	1-216-849-11	METAL CHIP 220K 5%	1/16W
R816	1-218-885-11	METAL CHIP 39K 0.50%	1/16W
R817	1-216-837-11	METAL CHIP 22K 5%	1/16W

< VARIABLE RESISTOR >

Ref. No.	Part No.	Description	Remark
RV301	1-223-382-11	RES, VAR, CARBON 10K/10K (VOLUME)	
RV501	1-238-602-11	RES, ADJ, CARBON 47K	
RV502	1-238-601-11	RES, ADJ, CARBON 22K	
RV503	1-238-601-11	RES, ADJ, CARBON 22K	

< SWITCH >

Ref. No.	Part No.	Description	Remark
S301	1-571-506-41	SWITCH, SLIDE (AVLS)	
S302	1-571-506-41	SWITCH, SLIDE (BASS BOOST)	
S801	1-571-275-31	SWITCH, SLIDE (HOLD)	
S802	1-572-198-11	SWITCH, KEYBOARD (▶II)	
S803	1-572-198-11	SWITCH, KEYBOARD (■)	
S804	1-572-198-11	SWITCH, KEYBOARD (I◀◀)	
S805	1-572-198-11	SWITCH, KEYBOARD (▶▶I)	
S806	1-572-198-11	SWITCH, KEYBOARD (PLAY MODE)	
S807	1-572-198-11	SWITCH, KEYBOARD (REPEAT/ENTER)	
S808	1-570-953-11	SWITCH, PUSH (1 KEY) (OPEN)	
S809	1-692-532-21	SWITCH, PUSH (1 KEY) (R. BATT)	

< TRANSFORMER >

Ref. No.	Part No.	Description	Remark
T401	1-450-401-11	TRANSFORMER, DC-DC CONVERTER	

< VIBRATOR >

Ref. No.	Part No.	Description	Remark
X301	1-760-307-11	VIBRATOR, CERAMIC (16.9MHz)	
X801	1-579-956-11	VIBRATOR, CERAMIC (3.58MHz)	

****

MISCELLANEOUS
****

Ref. No.	Part No.	Description	Remark
⚠154	8-848-289-11	DEVICE, OPTCAL (KSS-331A)	
159	1-948-418-21	HARNESS	
M901	X-2625-485-1	MOTOR ASSY, T.T. (SPINDLE)	
M902	X-2625-171-2	MOTOR ASSY, SLED	
S901	1-570-771-11	SWITCH (LIMIT)	

****

ACCESSORIES & PACKING MATERIALS
****

Ref. No.	Part No.	Description	Remark
⚠	1-467-007-21	ADAPTOR, AC (AC-E455) (D-131:AU)	
⚠	1-467-008-11	ADAPTOR, AC (AC-E455) (D-131:AEP, E13, G, FR)	
⚠	1-467-009-11	ADAPTOR, AC (AC-E455) (D-131:US, CA)	
⚠	1-467-012-11	ADAPTOR, AC (AC-E455) (D-131:EA)	
⚠	1-467-013-11	ADAPTOR, AC (AC-E455) (D-131:UK)	
⚠	1-467-195-11	ADAPTOR, AC (AC-E455A) (D-131:US, CA, E92)	
⚠	1-467-550-11	ADAPTOR, AC (AC-E455A) (D-131:PA, E33, MX)	
	1-558-145-32	CORD, CONNECTION	
⚠	1-569-007-11	ADAPTER, CONVERSION 2P (D-131:PA, E33)	
⚠	1-569-008-11	ADAPTER, CONVERSION 2P (D-131:E13, EA)	
	3-758-417-11	MANUAL, INSTRUCTION (SPANISH) (D-130:AEP/ D-131:AEP, E, MX)	
	3-758-417-21	MANUAL, INSTRUCTION (ENGLISH) (D-130/ D-131:US, CA, E, AEP, EA, AU, UK)	
	3-758-417-31	MANUAL, INSTRUCTION (FRENCH) (D-130:AEP/ D-131:CA, AEP, FR)	
	3-758-417-41	MANUAL, INSTRUCTION (DUTCH) (D-130/ D-131:AEP)	
	3-758-417-51	MANUAL, INSTRUCTION (SWEDISH) (D-130/ D-131:AEP)	
	3-758-417-61	MANUAL, INSTRUCTION (PORTUGUESE) (D-130/ D-131:AEP)	
	3-758-417-71	MANUAL, INSTRUCTION (GERMAN) (D-130:AEP/ D-131:AEP, G)	
	3-758-417-81	MANUAL, INSTRUCTION (ITALIAN) (D-130/ D-131:AEP)	
*	4-965-705-01	CUSHION (D-131:US, CA)	

The components identified by mark ⚠ or dotted line with mark. ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
*	4-965-706-01	CUSHION (D-131:MX, E)	
*	4-965-707-01	CUSHION (D-131:AU)	
*	4-965-708-01	INDIVIDUAL CARTON (D-131:US, CA)	
*	4-965-710-01	INDIVIDUAL CARTON (D-131:AEP, G, FR, UK)	
*	4-965-711-01	INDIVIDUAL CARTON (D-131:EA, AU,)	
*	4-965-712-01	INDIVIDUAL CARTON (D-131:E, MX)	
*	4-966-333-01	INDIVIDUAL CARTON (D-130)	
	8-953-011-95	HEADPHONE MDR-014B//0 SET (D-131:US)	
	8-953-538-91	HEADPHONE MDR-E741//K1 SET (D-130/ D-131:CA, AEP, E, G, EA, AU, FR, UK)	

English
94C05110-1
Printed in Japan
© 1994. 3

9-959-403-11

Sony Corporation
General Audio Group

Published by Audio Sector Quality Assurance Dept.

D-130/131

SONY®

SERVICE MANUAL

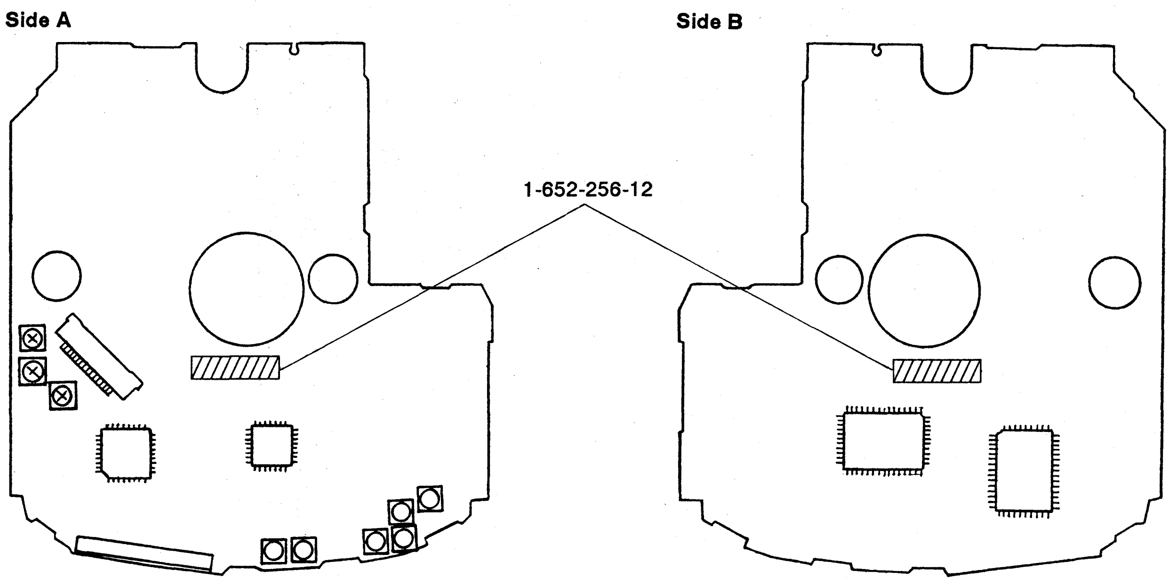
UK Model
AEP Model
D-130/131
US Model
Canadian Model
E Model
Australian Model
D-131

SUPPLEMENT-1

File this supplement with the service manual.

Subject:
Main Board Modification
(Part Number Suffix -11 → -12)

– MAIN BOARD –



English
94E05110-1
Printed in Japan
© 1994. 5

Sony Corporation
Consumer A&V Products Company
Personal A&V Products Div.

Published by Home A&V Products Div.
Quality Engineering Dept.

9-959-403-81

MAIN

ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL:Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F:nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u:μ, for example:
  uA..: μA.. uPA..: μPA..
  uPB..: μPB.. uPC..: μPC.. uPD..: μPD..
- CAPACITORS
  uF: μF
- COILS
  uH: μH

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description			Remark
	A-3276-336-A	MAIN BOARD, COMPLETE ********************			
	4-965-550-01	HOLDER (LCD)			
	4-965-551-01	TERMINAL BOARD, BATTERY			
		< CAPACITOR >			
C105	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C106	1-126-603-11	ELECT CHIP	4.7uF	20%	35V
C107	1-126-160-11	ELECT	1uF	20%	50V
C108	1-165-128-11	CERAMIC CHIP	0.22uF		16V
C109	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C110	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C205	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C206	1-126-603-11	ELECT CHIP	4.7uF	20%	35V
C207	1-126-160-11	ELECT	1uF	20%	50V
C208	1-165-128-11	CERAMIC CHIP	0.22uF		16V
C209	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C210	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C301	1-128-110-11	ELECT	470uF	20%	4V
C303	1-124-779-00	ELECT CHIP	10uF	20%	16V
C304	1-164-234-11	CERAMIC CHIP	1uF		10V
C305	1-126-157-11	ELECT	10uF	20%	16V
C306	1-164-234-11	CERAMIC CHIP	1uF		10V
C307	1-126-153-11	ELECT	22uF	20%	6.3V
C308	1-126-603-11	ELECT CHIP	4.7uF	20%	35V
C309	1-164-234-11	CERAMIC CHIP	1uF		10V
C310	1-128-008-11	ELECT CHIP	3.3uF	20%	35V
C311	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C312	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C313	1-164-234-11	CERAMIC CHIP	1uF		10V
C314	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C317	1-124-779-00	ELECT CHIP	10uF	20%	16V
C318	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C319	1-164-337-11	CERAMIC CHIP	2.2uF		16V
C320	1-104-908-11	TANTAL. CHIP	47uF	20%	4V
C321	1-164-234-11	CERAMIC CHIP	1uF		10V
C322	1-164-234-11	CERAMIC CHIP	1uF		10V

Ref. No.	Part No.	Description			Remark
C323	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C324	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C325	1-162-944-11	CERAMIC CHIP	18PF	5%	50V
C327	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C401	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C402	1-127-485-00	ELECT(SOLID)	33uF	20%	6.3V
C403	1-127-485-00	ELECT(SOLID)	33uF	20%	6.3V
C404	1-162-951-11	CERAMIC CHIP	68PF	5%	50V
C405	1-164-234-11	CERAMIC CHIP	1uF		10V
C409	1-126-176-11	ELECT	220uF	20%	10V
C411	1-126-784-11	ELECT	33uF	20%	6.3V
C412	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C413	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C420	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C501	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C502	1-165-128-11	CERAMIC CHIP	0.22uF		16V
C503	1-164-234-11	CERAMIC CHIP	1uF		10V
C504	1-162-942-11	CERAMIC CHIP	12PF	5%	50V
C505	1-124-584-00	ELECT	100uF	20%	10V
C506	1-162-932-11	CERAMIC CHIP	2PF	0.25PF	50V
C507	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C508	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C509	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C510	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C511	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C512	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C513	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C515	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C518	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C519	1-126-784-11	ELECT	33uF	20%	4V
C521	1-164-337-11	CERAMIC CHIP	2.2uF		16V
C522	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C523	1-126-784-11	ELECT	33uF	20%	4V
C524	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C525	1-164-234-11	CERAMIC CHIP	1uF		10V
C526	1-164-245-11	CERAMIC CHIP	0.015uF	10%	25V
C528	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C529	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C530	1-162-957-11	CERAMIC CHIP	220PF	5%	50V

Ref. No.	Pa
C531	1-1
C532	1-1
C533	1-1
C534	1-1
C535	1-1
C561	1-1
C562	1-1
C563	1-1
C564	1-1
C565	1-1
C601	1-1
C602	1-1
C603	1-1
C604	1-1
C605	1-1
C606	1-1
C607	1-1
C608	1-1
C609	1-1
C610	1-1
C631	1-1
C632	1-1
C701	1-1
C702	1-1
C703	1-1
C704	1-1
C705	1-1
C706	1-1
C707	1-1
C708	1-1
C709	1-1
C711	1-1
C712	1-1
C713	1-1
C714	1-1
C715	1-1
C716	1-1
C718	1-1
C719	1-1
C801	1-1
C802	1-1
C805	1-1
CN501	1-5
* CN701	1-6
* CN702	1-6
* CN703	1-6

s by
ease

mark
50V
50V
50V
50V

16V
6.3V
6.3V
50V
10V

10V
6.3V
16V
16V
6.3V

16V
16V
10V
50V
10V

F 50V
25V
25V
16V
25V

25V
16V
16V
50V
25V

4V
16V
50V
4V
25V

10V
25V
.25V
50V
50V

Ref. No.	Part No.	Description			Remark
C531	1-126-153-11	ELECT	22uF	20%	6.3V
C532	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C533	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C534	1-164-234-11	CERAMIC CHIP	1uF		10V
C535	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V
C561	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C562	1-164-234-11	CERAMIC CHIP	1uF		10V
C563	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C564	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C565	1-124-584-00	ELECT	100uF	20%	10V
C601	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C602	1-135-145-11	TANTALUM CHIP	0.47uF	10%	35V
C603	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C604	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C605	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C606	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C607	1-126-153-11	ELECT	22uF	20%	6.3V
C608	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C609	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C610	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C631	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C632	1-162-947-11	CERAMIC CHIP	33PF	5%	50V
C701	1-124-779-00	ELECT CHIP	10uF	20%	16V
C702	1-124-256-00	ELECT	1.5uF	20%	50V
C703	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C704	1-135-216-11	TANTALUM CHIP	10uF	20%	10V
C705	1-164-234-11	CERAMIC CHIP	1uF		10V
C706	1-165-128-11	CERAMIC CHIP	0.22uF		16V
C707	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C708	1-164-234-11	CERAMIC CHIP	1uF		10V
C709	1-164-234-11	CERAMIC CHIP	1uF		10V
C711	1-164-473-11	CERAMIC CHIP	820PF	5%	50V
C712	1-165-128-11	CERAMIC CHIP	0.22uF		16V
C713	1-165-128-11	CERAMIC CHIP	0.22uF		16V
C714	1-165-128-11	CERAMIC CHIP	0.22uF		16V
C715	1-124-779-00	ELECT CHIP	10uF	20%	16V
C716	1-124-256-00	ELECT	1.5uF	20%	50V
C718	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C719	1-107-493-11	TANTAL. CHIP	47uF	20%	2.5V
C801	1-126-601-11	ELECT CHIP	2.2uF	20%	50V
C802	1-164-234-11	CERAMIC CHIP	1uF		10V
C805	1-164-360-11	CERAMIC CHIP	0.1uF		16V

< CONNECTOR >

Ref. No.	Part No.	Description	Remark
CN501	1-566-534-11	CONNECTOR, FPC (ZIF) 18P	
* CN701	1-695-320-51	PIN, CONNECTOR (1.5MM) (SMD) 2P	
* CN702	1-695-320-31	PIN, CONNECTOR (1.5MM) (SMD) 2P	
* CN703	1-695-320-21	PIN, CONNECTOR (1.5MM) (SMD) 2P	

< DIODE >

Ref. No.	Part No.	Description		Remark
D101	8-719-978-23	DIODE	DTZ5.6-TT11	
D201	8-719-978-23	DIODE	DTZ5.6-TT11	
D301	8-719-978-23	DIODE	DTZ5.6-TT11	
D401	8-719-313-73	DIODE	SFPB-52	
D403	8-719-422-16	DIODE	MA8039-L-TX	
D404	8-719-313-73	DIODE	SFPB-52	
D405	8-719-938-72	DIODE	SB01-05CP	
D420	8-719-938-72	DIODE	SB01-05CP	
D701	8-719-978-63	DIODE	DTZ15-TT11	
D702	8-719-989-73	DIODE	SB007T03C	
D703	8-719-938-72	DIODE	SB01-05CP	
D704	8-719-986-76	DIODE	SB007W03C	
D801	8-719-024-81	DIODE	1SS300-TE85L	

< FERRITE BEAD >

Ref. No.	Part No.	Description	Remark
FB103	1-414-235-11	INDUCTOR, FERRITE BEAD	
FB203	1-414-235-11	INDUCTOR, FERRITE BEAD	
FB301	1-414-235-11	INDUCTOR, FERRITE BEAD	
FB302	1-414-235-11	INDUCTOR, FERRITE BEAD	
FB303	1-414-385-11	INDUCTOR, FERRITE BEAD	
FB304	1-414-235-11	INDUCTOR, FERRITE BEAD	

< IC >

Ref. No.	Part No.	Description		Remark
IC301	8-759-263-31	IC	TC9293FN-EL	
IC302	8-759-263-12	IC	BA3574FS-T1	
IC420	8-759-263-13	IC	RH5RI301B-T1	
IC501	8-752-063-45	IC	CXA1672Q	
IC561	8-759-177-69	IC	TLV2362ID-ELL2500	
IC601	8-752-361-93	IC	CXD2517Q	
IC701	8-759-263-14	IC	SC111281LFU	
IC702	8-759-031-84	IC	SC7S04F	
IC801	8-752-854-62	IC	CXP508L6-005Q	
IC802	8-759-988-04	IC	RH5VA25AA	
IC803	8-759-510-73	IC	BA10393F-E2	

< JACK >

Ref. No.	Part No.	Description	Remark
J301	1-565-287-41	JACK (LINE OUT)	
J302	1-565-287-11	JACK (PHONES)	
J401	1-691-099-51	JACK, DC (POLARITY UNIFIED TYPE) (DC IN 4.5V)	

< COIL >

Ref. No.	Part No.	Description		Remark
L101	1-412-002-31	INDUCTOR CHIP	4.7uH	
L201	1-412-002-31	INDUCTOR CHIP	4.7uH	
L304	1-412-006-31	INDUCTOR CHIP	10uH	
L305	1-412-002-31	INDUCTOR CHIP	4.7uH	
L401	1-412-622-51	INDUCTOR	10uH	

Ref. No.	Part No.	Description		Remark
L420	1-412-034-11	INDUCTOR CHIP	330uH	
L506	1-412-029-11	INDUCTOR CHIP	10uH	
L601	1-412-029-11	INDUCTOR CHIP	10uH	
L701	1-412-031-11	INDUCTOR CHIP	47uH	
L702	1-412-031-11	INDUCTOR CHIP	47uH	
L703	1-412-031-11	INDUCTOR CHIP	47uH	
L704	1-412-031-11	INDUCTOR CHIP	47uH	

< LIQUID CRYSTAL DISPLAY >

Ref. No.	Part No.	Description	Remark
LCD801	1-810-495-11	DISPLAY PANEL, LIQUID CRYSTAL	

< TRANSISTOR >

Ref. No.	Part No.	Description		Remark
Q101	8-729-013-35	TRANSISTOR	2SC4118-OY-TE85L	
Q201	8-729-013-35	TRANSISTOR	2SC4118-OY-TE85L	
Q304	8-729-907-39	TRANSISTOR	IMD2	
Q401	8-729-022-67	TRANSISTOR	2SC3650-TD	
Q402	8-729-923-36	TRANSISTOR	2SD1963-Q.R	
Q407	8-729-402-45	TRANSISTOR	UN5212	
Q408	8-729-902-96	TRANSISTOR	FMS1	
Q409	8-729-402-45	TRANSISTOR	UN5212	
Q410	8-729-922-34	TRANSISTOR	2SD1758F5-QR	
Q411	8-729-014-22	TRANSISTOR	RN2305-TE85L	
Q412	8-729-231-74	TRANSISTOR	2SC4116-GL	
Q501	8-729-216-22	TRANSISTOR	2SA1162-G	
Q561	8-729-014-18	TRANSISTOR	RN2303-TE85L	
Q562	8-729-014-18	TRANSISTOR	RN2303-TE85L	
Q563	8-729-014-04	TRANSISTOR	RN1307-TE85L	
Q601	8-729-014-04	TRANSISTOR	RN1307-TE85L	
Q801	8-729-403-35	TRANSISTOR	UN5113	

< RESISTOR >

Ref. No.	Part No.	Description			Remark
R107	1-216-813-11	METAL CHIP	220	5%	1/16W
R108	1-216-845-11	METAL CHIP	100K	5%	1/16W
R109	1-216-835-11	METAL CHIP	15K	5%	1/16W
R110	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R111	1-216-789-11	METAL CHIP	2.2	5%	1/16W
R207	1-216-813-11	METAL CHIP	220	5%	1/16W
R208	1-216-845-11	METAL CHIP	100K	5%	1/16W
R209	1-216-835-11	METAL CHIP	15K	5%	1/16W
R210	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R211	1-216-789-11	METAL CHIP	2.2	5%	1/16W
R303	1-218-610-11	METAL CHIP	4.7	5%	1W
R304	1-216-833-11	METAL CHIP	10K	5%	1/16W
R305	1-216-845-11	METAL CHIP	100K	5%	1/16W
R306	1-216-857-11	METAL CHIP	1M	5%	1/16W
R312	1-216-839-11	METAL CHIP	33K	5%	1/16W
R313	1-216-013-00	METAL CHIP	33	5%	1/10W
R401	1-218-885-11	METAL CHIP	39K	0.50%	1/16W

Ref. No.	Part No.	Description			Remark
R402	1-218-870-11	METAL CHIP	9.1K	0.50%	1/16W
R403	1-216-819-11	METAL CHIP	680	5%	1/16W
R404	1-216-797-11	METAL CHIP	10	5%	1/16W
R405	1-216-864-11	METAL CHIP	0	5%	1/16W
R409	1-216-813-11	METAL CHIP	220	5%	1/16W
R410	1-216-809-11	METAL CHIP	100	5%	1/16W
R411	1-216-833-11	METAL CHIP	10K	5%	1/16W
R412	1-216-815-11	METAL CHIP	330	5%	1/16W
R413	1-216-817-11	METAL CHIP	470	5%	1/16W
R414	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R415	1-218-605-11	METAL CHIP	1.8	5%	1W
R416	1-216-797-11	METAL CHIP	10	5%	1/16W
R501	1-217-671-11	METAL CHIP	1	5%	1/10W
R502	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R503	1-218-873-11	METAL CHIP	12K	0.50%	1/16W
R504	1-218-873-11	METAL CHIP	12K	0.50%	1/16W
R505	1-218-873-11	METAL CHIP	12K	0.50%	1/16W
R506	1-218-873-11	METAL CHIP	12K	0.50%	1/16W
R507	1-218-286-11	METAL GLAZE	91	5%	1/16W
R508	1-216-833-11	METAL CHIP	10K	5%	1/16W
R509	1-216-833-11	METAL CHIP	10K	5%	1/16W
R510	1-216-845-11	METAL CHIP	100K	5%	1/16W
R511	1-218-296-11	METAL GLAZE	75K	5%	1/16W
R512	1-218-875-11	METAL CHIP	15K	0.50%	1/16W
R513	1-218-873-11	METAL CHIP	12K	0.50%	1/16W
R514	1-216-840-11	METAL CHIP	39K	5%	1/16W
R515	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R516	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R518	1-216-857-11	METAL CHIP	1M	5%	1/16W
R519	1-216-821-11	METAL CHIP	1K	5%	1/16W
R520	1-216-849-11	METAL CHIP	220K	5%	1/16W
R521	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R522	1-216-837-11	METAL CHIP	22K	5%	1/16W
R523	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R524	1-216-843-11	METAL CHIP	68K	5%	1/16W
R525	1-216-855-11	METAL CHIP	680K	5%	1/16W
R526	1-216-846-11	METAL CHIP	120K	5%	1/16W
R527	1-216-855-11	METAL CHIP	680K	5%	1/16W
R528	1-216-843-11	METAL CHIP	68K	5%	1/16W
R529	1-216-849-11	METAL CHIP	220K	5%	1/16W
R530	1-216-841-11	METAL CHIP	47K	5%	1/16W
R531	1-216-824-11	METAL CHIP	1.8K	5%	1/16W
R532	1-218-347-11	METAL GLAZE	91K	5%	1/16W
R533	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R534	1-216-839-11	METAL CHIP	33K	5%	1/16W
R551	1-216-295-00	METAL GLAZE	0	5%	1/10W
R552	1-216-295-00	METAL GLAZE	0	5%	1/10W
R561	1-216-827-11	METAL CHIP	3.3K	5%	1/16W

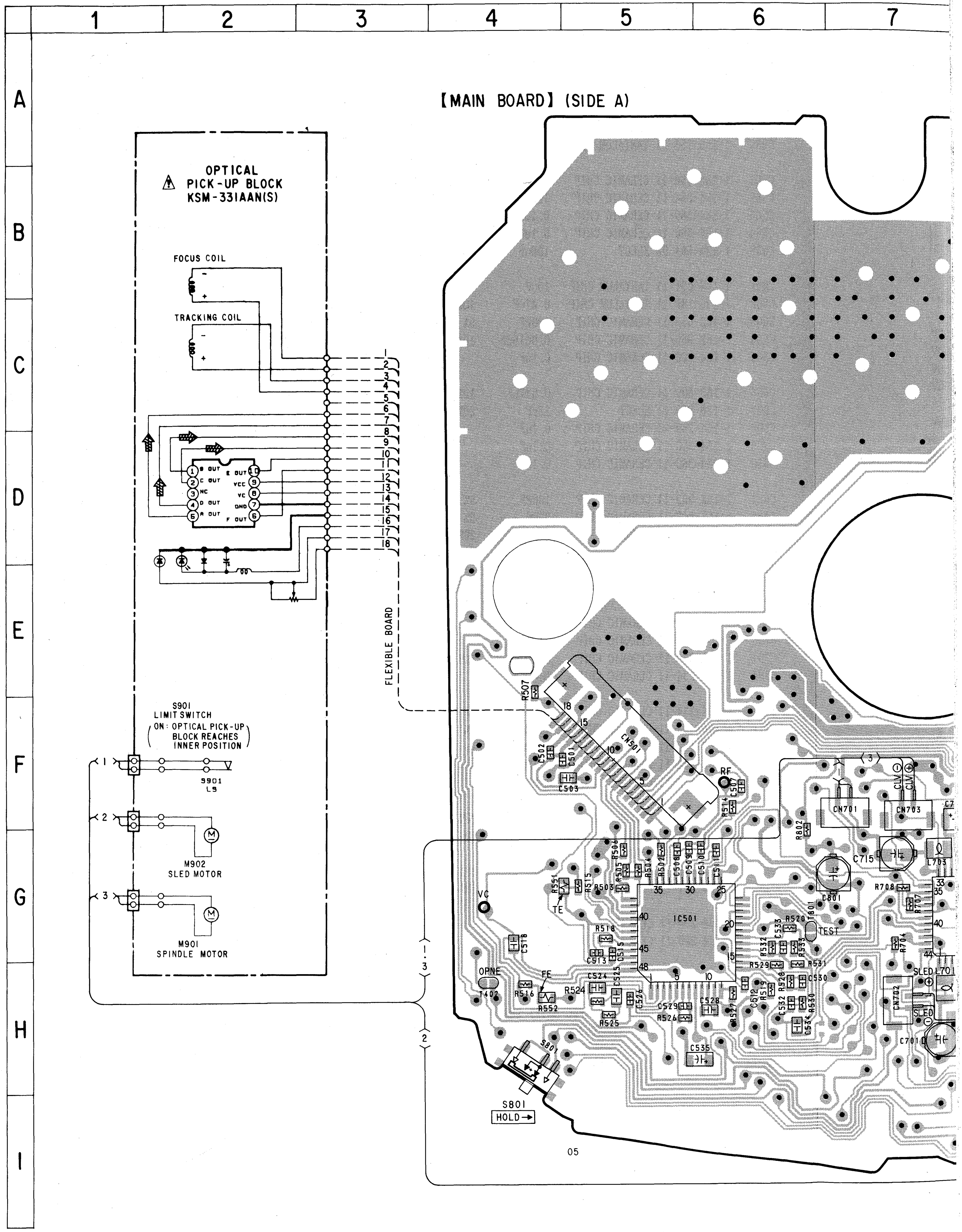
MAIN

Ref. No.	Part No.	Description	Remark
R562	1-216-836-11	METAL CHIP 18K 5%	1/16W
R563	1-216-829-11	METAL CHIP 4.7K 5%	1/16W
R564	1-216-832-11	METAL CHIP 8.2K 5%	1/16W
R602	1-216-857-11	METAL CHIP 1M 5%	1/16W
R603	1-216-833-11	METAL CHIP 10K 5%	1/16W
R604	1-216-857-11	METAL CHIP 1M 5%	1/16W
R605	1-216-827-11	METAL CHIP 3.3K 5%	1/16W
R606	1-216-827-11	METAL CHIP 3.3K 5%	1/16W
R607	1-216-833-11	METAL CHIP 10K 5%	1/16W
R701	1-216-823-11	METAL CHIP 1.5K 5%	1/16W
R702	1-216-821-11	METAL CHIP 1K 5%	1/16W
R703	1-216-842-11	METAL CHIP 56K 5%	1/16W
R704	1-216-827-11	METAL CHIP 3.3K 5%	1/16W
R705	1-216-857-11	METAL CHIP 1M 5%	1/16W
R706	1-216-829-11	METAL CHIP 4.7K 5%	1/16W
R707	1-216-825-11	METAL CHIP 2.2K 5%	1/16W
R708	1-216-825-11	METAL CHIP 2.2K 5%	1/16W
R709	1-216-833-11	METAL CHIP 10K 5%	1/16W
R801	1-216-845-11	METAL CHIP 100K 5%	1/16W
R802	1-216-841-11	METAL CHIP 47K 5%	1/16W
R804	1-216-825-11	METAL CHIP 2.2K 5%	1/16W
R805	1-216-837-11	METAL CHIP 22K 5%	1/16W
R806	1-216-837-11	METAL CHIP 22K 5%	1/16W
R807	1-216-837-11	METAL CHIP 22K 5%	1/16W
R808	1-216-845-11	METAL CHIP 100K 5%	1/16W
R810	1-216-846-11	METAL CHIP 120K 5%	1/16W
R811	1-218-883-11	METAL CHIP 33K 0.50%	1/16W
R812	1-218-867-11	METAL CHIP 6.8K 0.50%	1/16W
R813	1-218-877-11	METAL CHIP 18K 0.50%	1/16W
R814	1-216-821-11	METAL CHIP 1K 5%	1/16W
R815	1-216-849-11	METAL CHIP 220K 5%	1/16W
R816	1-218-730-11	METAL CHIP 39K 0.50%	1/16W
R817	1-216-837-11	METAL CHIP 22K 5%	1/16W
		< VARIABLE RESISTOR >	
RV301	1-223-382-11	RES, VAR, CARBON 10K/10K (VOLUME)	
RV501	1-238-602-11	RES, ADJ, CARBON 47K	
RV502	1-238-601-11	RES, ADJ, CARBON 22K	
RV503	1-238-601-11	RES, ADJ, CARBON 22K	
		< SWITCH >	
S301	1-571-506-41	SWITCH, SLIDE (AVLS)	
S302	1-571-506-41	SWITCH, SLIDE (BASS BOOST)	
S801	1-571-275-31	SWITCH, SLIDE (HOLD)	
S802	1-572-198-11	SWITCH, KEYBOARD (▶❚❚)	
S803	1-572-198-11	SWITCH, KEYBOARD (■)	
S804	1-572-198-11	SWITCH, KEYBOARD (⏮)	
S805	1-572-198-11	SWITCH, KEYBOARD (⏭)	
S806	1-572-198-11	SWITCH, KEYBOARD (PLAY MODE)	

Ref. No.	Part No.	Description	Remark
S807	1-572-198-11	SWITCH, KEYBOARD (REPEAT/ENTER)	
S808	1-570-953-11	SWITCH, PUSH (1 KEY) (OPEN)	
S809	1-692-532-21	SWITCH, PUSH (1 KEY) (R. BATT)	
		< TRANSFORMER >	
T401	1-450-401-11	TRANSFORMER, DC-DC CONVERTER	
		< VIBRATOR >	
X301	1-760-307-11	VIBRATOR, CERAMIC (16.9MHz)	
X801	1-579-956-11	VIBRATOR, CERAMIC (3.58MHz)	

****

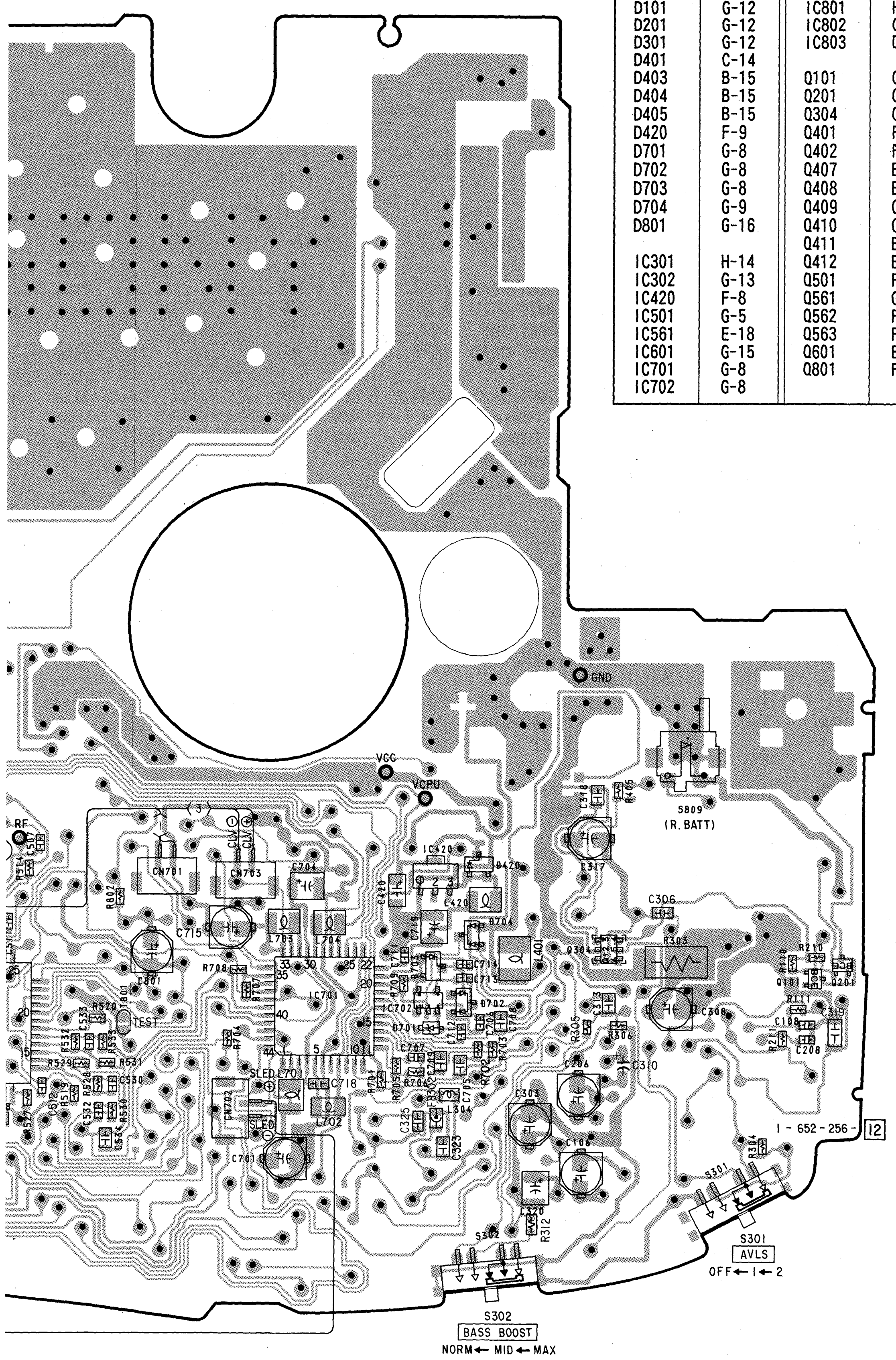
PRINTED WIRING BOARD

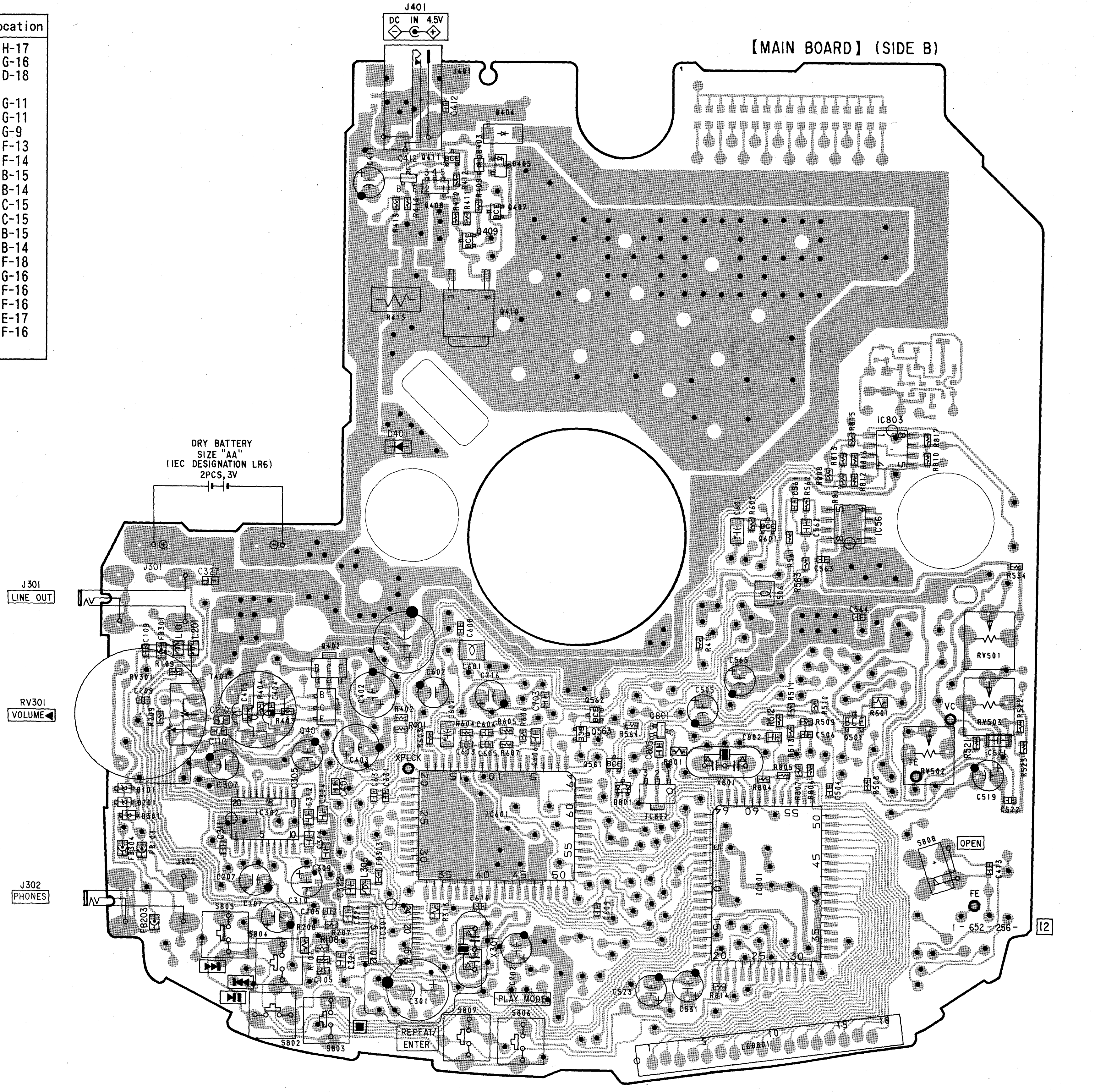

1
2
3
4
5
6
7
A
B
C
D
E
F
G
H
I
【MAIN BOARD】 (SIDE A)
OPTICAL PICK-UP BLOCK KSM-331AAN(S)
FOCUS COIL
TRACKING COIL
B OUT
C OUT
NC
D OUT
A OUT
E OUT
VCC
VC
GND
F OUT
FLEXIBLE BOARD
S901 LIMIT SWITCH (ON: OPTICAL PICK-UP BLOCK REACHES INNER POSITION)
S901 L9
M902 SLED MOTOR
M901 SPINDLE MOTOR
CN501
CN701
CN703
IC501
RF
VC
TE
FE
TEST
OPNE
T402
S801 HOLD
SLED
L701
L703
C715
C801
R708
C535
05

6 7 8 9 10 11 12 13 14 15 16 17 18 19

- **Semiconductor Location**

Ref. No.	Location	Ref. No.	Location
D101	G-12	IC801	H-17
D201	G-12	IC802	G-16
D301	G-12	IC803	D-18
D401	C-14		
D403	B-15	Q101	G-11
D404	B-15	Q201	G-11
D405	B-15	Q304	G-9
D420	F-9	Q401	F-13
D701	G-8	Q402	F-14
D702	G-8	Q407	B-15
D703	G-8	Q408	B-14
D704	G-9	Q409	C-15
D801	G-16	Q410	C-15
		Q411	B-15
IC301	H-14	Q412	B-14
IC302	G-13	Q501	F-18
IC420	F-8	Q561	G-16
IC501	G-5	Q562	F-16
IC561	E-18	Q563	F-16
IC601	G-15	Q601	E-17
IC701	G-8	Q801	F-16
IC702	G-8		


GND
VCC
VCPU
RF
TEST
SLED
CN701
CN703
IC701
IC702
IC420
D420
Q304
R303
S809
(R. BATT)
C317
C306
C308
C310
C303
C105
S301
AVLS
OFF ← 1 ← 2
S302
BASS BOOST
NORM ← MID ← MAX
1 - 652 - 256 - 12


【MAIN BOARD】 (SIDE B)
J401
DC IN 4.5V
DRY BATTERY
SIZE "AA"
(IEC DESIGNATION LR6)
2PCS, 3V
J301
LINE OUT
RV301
VOLUME
J302
PHONES
D401
Q410
R415
IC803
IC561
IC601
IC801
IC802
IC302
XPLCK
RV501
RV502
RV503
VC
TE
FE
S808
OPEN
S807
REPEAT/ENTER
S806
PLAY MODE
S802
S803
S804
S805
X301
X801
LC6801
1 - 652 - 256 - 12

Note on Printed Wiring Board:

- ○——— : parts extracted from the component side.
- ● : Through hole.
- △ : internal component.
- ▨ : Pattern from the side which enables seeing.

(The other layers' patterns are not indicated.)

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component Side)	Parts on the parts face side seen from the parts face are indicated.

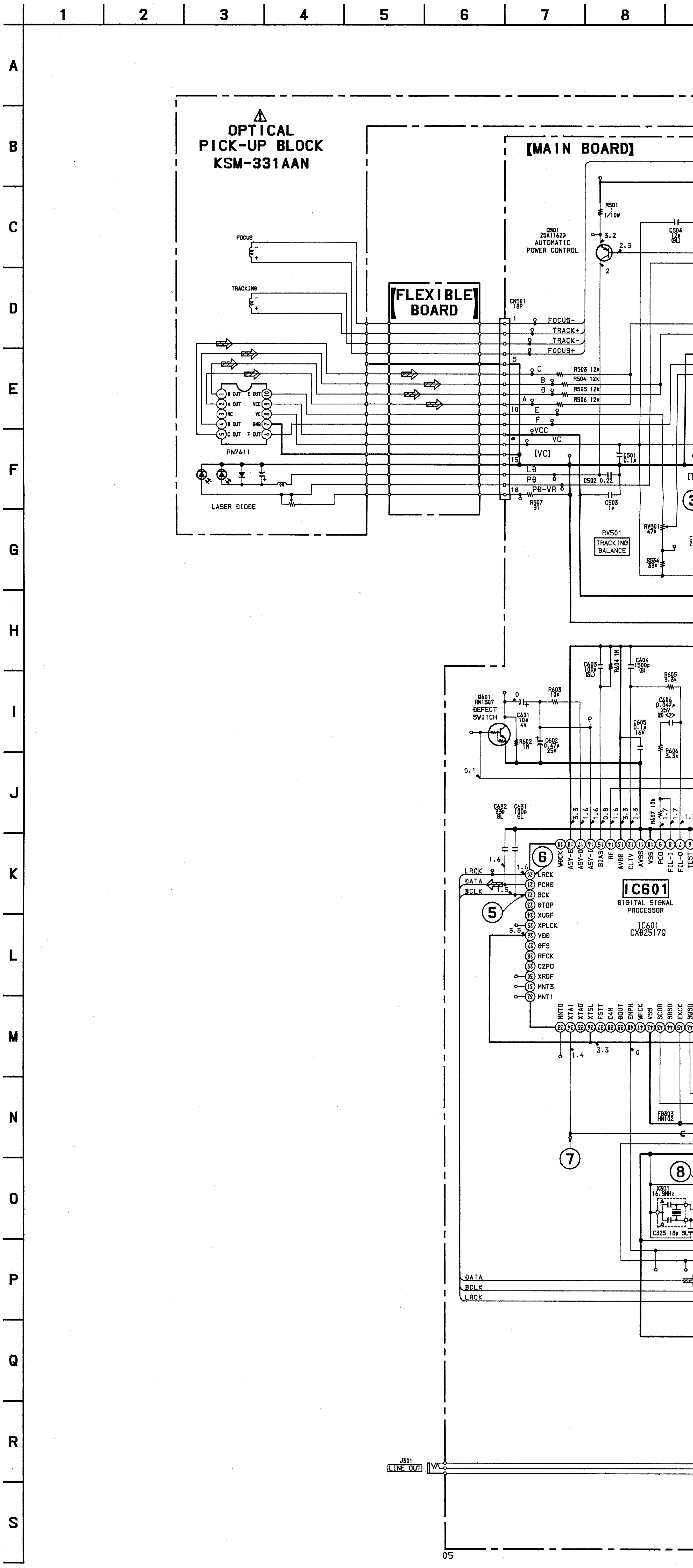
Note on Schematic Diagram:

- All capacitors are in μF unless otherwise noted. pF: μμF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼ W or less unless otherwise specified.
- △ : internal component.

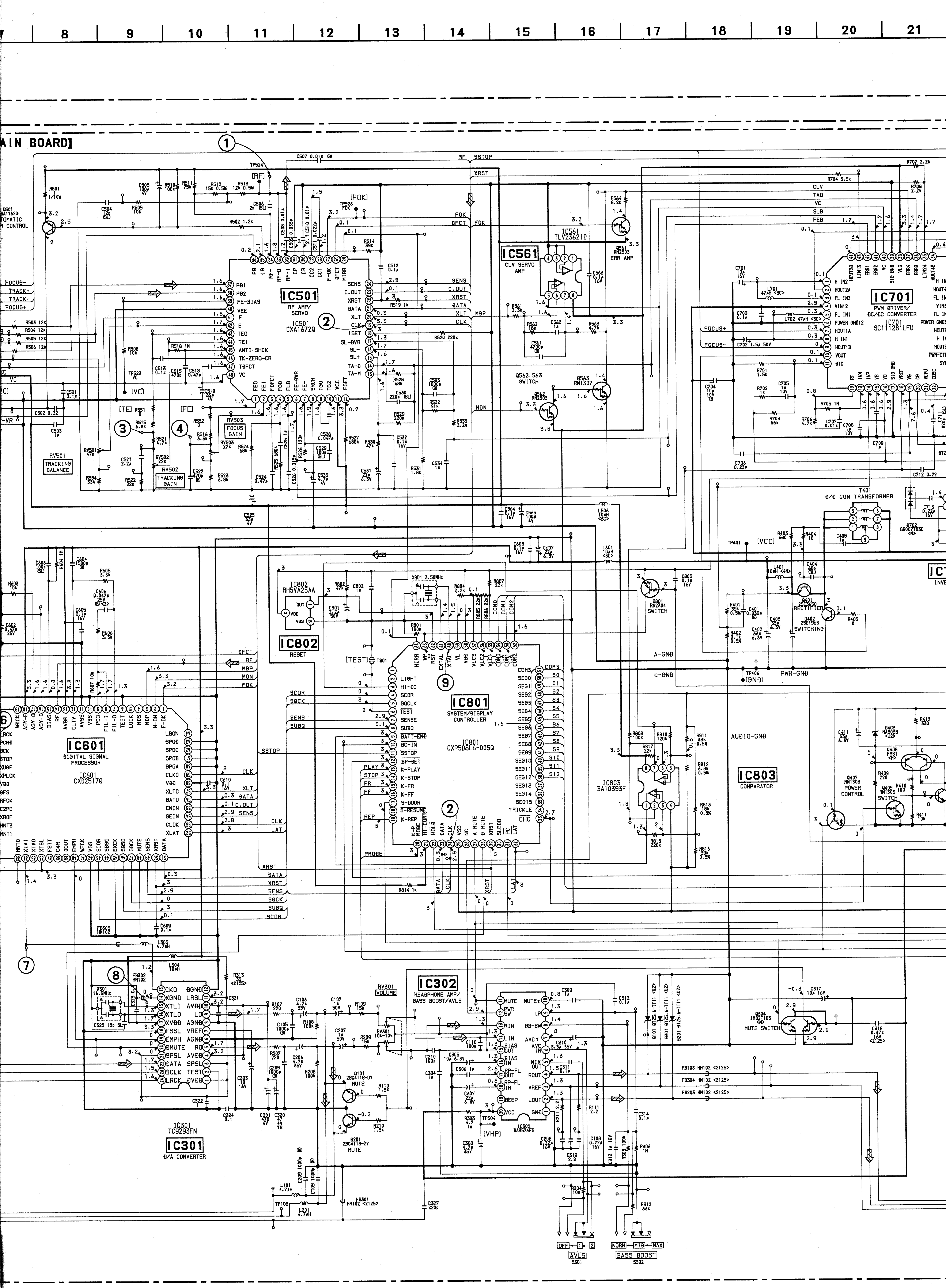
Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

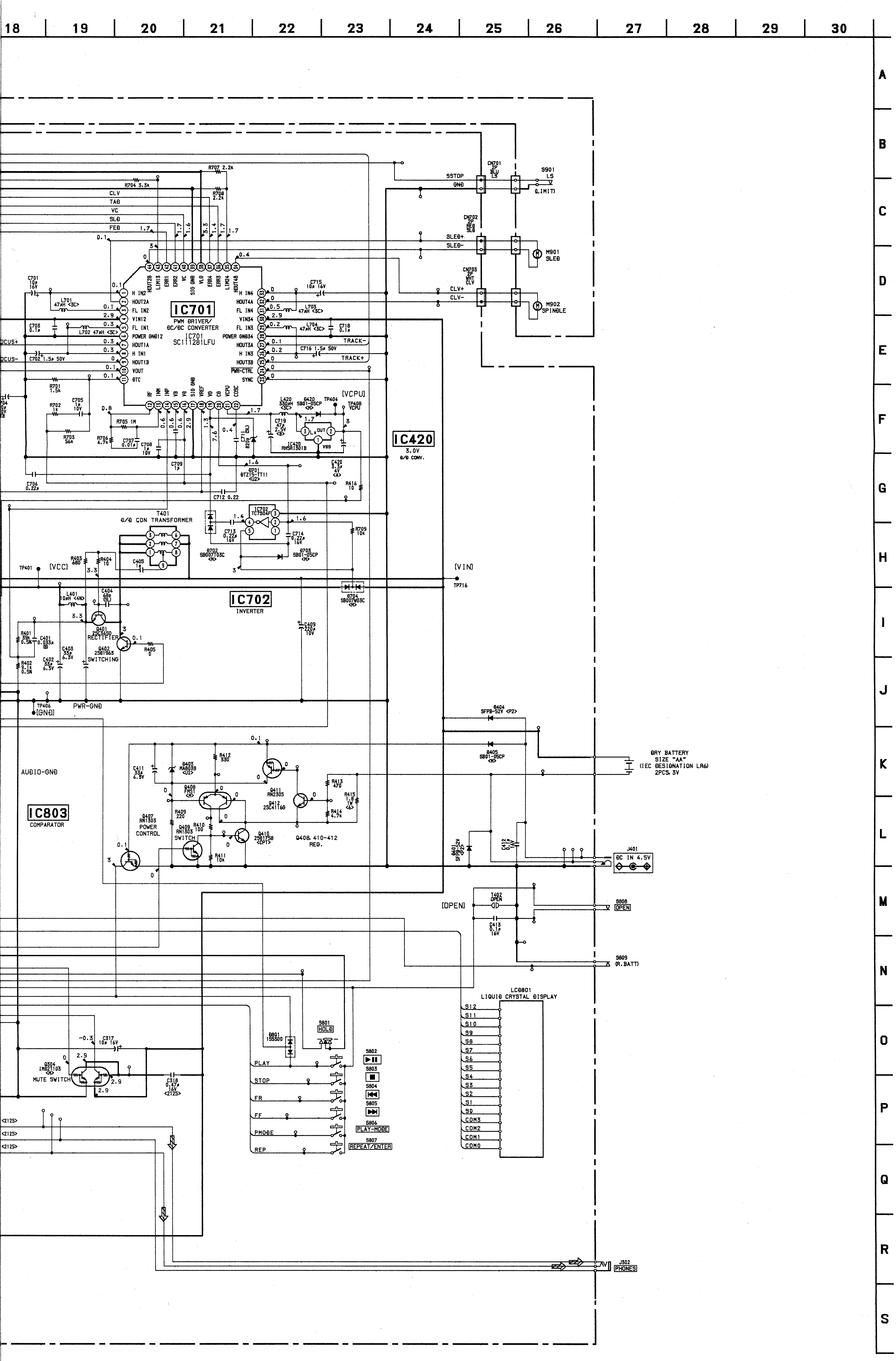
- ▬▬ : B + Line.
- Power voltage is dc 3 V and fed with regulated dc power supply from BATT terminal.
- Voltages and waveforms are dc with respect to ground under no-signal conditions.
- Voltages are taken with a VOM (10 MΩ/V).
  Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope.
  Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  ⇨ : CD

SCHEMATIC DIAGRAM



1
2
3
4
5
6
7
8
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
S
⚠
OPTICAL
PICK-UP BLOCK
KSM-331AAN
FOCUS
TRACKING
PN7611
LASER DIODE
FLEXIBLE BOARD
[MAIN BOARD]
CN501 18P
FOCUS-
TRACK+
TRACK-
FOCUS+
R503 12k
R504 12k
R505 12k
R506 12k
VCC
VC
[VC]
LD
PD
PD-VR
R507 91
C501 0.1μ
C502 0.22
C503 1μ
R501 1 1/10W
Q501 2SA1162G AUTOMATIC POWER CONTROL
3.2
2.5
C504 12p SL
RV501 TRACKING BALANCE
RV501 47k
R534 33k
Q601 RN1307 DEFECT SWITCH
C601 10μ 4V
R602 1M
C602 0.47μ 25V
R603 10k
C603 100p SL
R604 1M
C604 1500p
R605 3.3k
C606 0.047μ 25V
C605 0.1μ 16V
R606 3.3k
R607 10k
C632 33p SL
C631 100p SL
IC601
DIGITAL SIGNAL PROCESSOR
IC601 CXD2517Q
WDCK
ASY-E
ASY-O
ASY-I
BIAS
RF
AVDD
CLTV
AVSS
VSS
PCO
FIL-I
FIL-O
TEST
LRCK
PCMD
BCK
GTOP
XUGF
XPLCK
VDD
GFS
RFCK
C2PO
XROF
MNT3
MNT1
MNT0
XTAI
XTAO
XTSL
FSTT
C4M
DOUT
EMPH
WFCK
VSS
SCOR
SBSO
EXCK
SQSO
LRCK
DATA
BCLK
DATA
BCLK
LRCK
5
6
7
8
X301 16.9MHz
C325 18p SL
FB303 HM102
J301 LINE OUT


AIN BOARD]
IC501
RF AMP/SERVO
IC501 CXA1672Q
IC561
CLV SERVO AMP
IC561 TLV2362ID
Q561 RN2303 ERR AMP
Q562, 563 SWITCH
IC701
PWM DRIVER/DC/DC CONVERTER
IC701 SC111281LFU
T401
D/D CON TRANSFORMER
Q401 2SC5650 RECTIFIER
Q402 2SB1963 SWITCHING
Q801 RN2304 SWITCH
IC802 RH5VA25AA
IC802
RESET
X801 3.58MHz
IC801
SYSTEM/DISPLAY CONTROLLER
IC801 CXP50816-005Q
IC803 BA10393F
IC803
COMPARATOR
AUDIO-GND
A-GND
D-GND
PWR-GND
Q407 RN1303 POWER CONTROL
Q408 FN5I
Q409 RN1303 SWITCH
IC601
DIGITAL SIGNAL PROCESSOR
IC601 CXD2517Q
RV501 TRACKING BALANCE
RV502 TRACKING GAIN
RV503 FOCUS GAIN
X301 16.9MHz
IC301 TC9293FN
IC301
D/A CONVERTER
RV301 VOLUME
IC302
HEADPHONE AMP/BASS BOOST/AVLS
IC302 BA3574FS
Q101 2SC4118-OY MUTE
Q201 2SC4118-ZY MUTE
Q304 IMB2T103 MUTE SWITCH
OFF-1-2
AVLS S301
NORM-MID-MAX
BASS BOOST S302
①
②
③
④
⑦
⑧
⑨
8
9
10
11
12
13
14
15
16
17
18
19
20
21


18
19
20
21
22
23
24
25
26
27
28
29
30
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
S
IC701
PWM DRIVER/
DC/DC CONVERTER
IC701
SC111281LFU
IC420
3.0V
D/D CONV.
IC702
INVERTER
IC803
COMPARATOR
CN701 2P
CN702 2P
CN703 2P
S901 LS (LIMIT)
M901 SLED
M902 SPINDLE
SSTOP
GND
SLED+
SLED-
CLV+
CLV-
CLV
TAD
VC
SLD
FED
TRACK-
TRACK+
R707 2.2k
R704 3.3k
R708 2.2k
C701 10µ 16V
L701 47µH
C703 0.1µ
L702 47µH
C702 1.5µ 50V
R701 1.5k
R702 1k
C705 1µ 10V
R705 1M
R703 56k
R706 4.7k
C707 0.01µ
C708 1µ 10V
C709 1µ
C706 0.22µ
C715 10µ 16V
L703 47µH
L704 47µH
C718 0.1µ
C716 1.5µ 50V
L420 330µH
D420 SB01-05CP
TP404
[VCPU]
TP408 VCPU
C719 47µ 2.5V
IC420 RH5RI301B
C420 3.3µ 4V
R416 10
D701 DTZ15-TT11
C712 0.22
C711 820p
T401
D/D CON TRANSFORMER
IC702 TC7S04F
C713 0.22µ 16V
C714 0.22µ 16V
R709 10k
D702 SB007T03C
D703 SB01-05CP
D704 SB007W03C
TP401
[VCC]
R403 680
R404 10
C405 1µ
[VIN]
TP716
L401 10µH
C404 68p
Q401 2SC5650 RECTIFIER
Q402 2SB1963 SWITCHING
R405 0
R401 39k 0.5%
C401 0.033µ
C403 33µ 6.3V
R402 9.1k 0.5%
C402 33µ 6.3V
C409 220µ 10V
TP406 [GND]
PWR-GND
AUDIO-GND
D404 SFPB-52V
D405 SB01-05CP
DRY BATTERY SIZE "AA" (IEC DESIGNATION LR6) 2PCS, 3V
C411 33µ 6.3V
D403 MA8039
R412 330
Q408 FMS1
R413 470
R415 1.8 1W
Q411 RN2305
Q412 2SC4116G
R414 4.7k
R409 220
R410 100
Q407 RN1303 POWER CONTROL
Q409 RN1303 SWITCH
R411 10k
Q410 2SB1758
Q408, 410-412 REG.
D401 SFPB-52V
C412 16V
J401 DC IN 4.5V
T402 OPEN
[OPEN]
S808 OPEN
C413 0.1µ 16V
S809 (R.BATT)
LCD801 LIQUID CRYSTAL DISPLAY
S12 S11 S10 S9 S8 S7 S6 S5 S4 S3 S2 S1 S0 COM3 COM2 COM1 COM0
D801 1SS300
S801 HOLD
S802 ►II
S803 ■
S804 I◄◄
S805 ►►I
S806 PLAY-MODE
S807 REPEAT/ENTER
PLAY
STOP
FR
FF
PMODE
REP
C317 10µ 16V
Q304 IMD21103 MUTE SWITCH
C318 0.47µ 16V
J302 PHONES

D-130/131

SONY

SERVICE MANUAL

Canadian Model
UK Model
AEP Model
D-130/131
US Model
E Model
Australian Model
D-131

SUPPLEMENT-3

File this supplement with the service manual.

Subject:	**1.**	**Correction**
	2.	**Board Modification**

(ENG-94003)

The optical pick-up block has been changed from KSS-331A (Former type) to KSS-411A (New type) in the midst of production. According to this change, printed wiring boards have been modified.
This supplement-3 contains only the informations about new type.
For the informations about former type, please refer to the D-130/131 service manual (9-959-403-□□) previously issued.

Section *Title* *Page*

1. CORRECTION ·························· 1

2. BOARD MODIFICATION

2-1. Service Note ···························· 3
2-2. Service Mode ···························· 4
2-3. Electrical Adjustments ···················· 5
2-4. Diagrams ································ 8
  2-4-1. Block Diagram ······················ 8
  2-4-2. Printed Wiring Boards ················ 10
  2-4-3. Schematic Diagram ·················· 13
  2-4-4. IC Pin Function ···················· 21
2-5. Exploded Views ························ 23
2-6. Electrical Parts List ···················· 26

1. CORRECTION

Please correct your service manual page 25.

Ref. No.	Incorrect	Correct
11	4-966-638-01 CABINET (FRONT) (BLACK) (D-130/D-131:US)	4-966-638-01 CABINET (FRONT) (BLACK) (D-131: US) 4-966-638-11 CABINET (FRONT) (BLACK) (D-130)

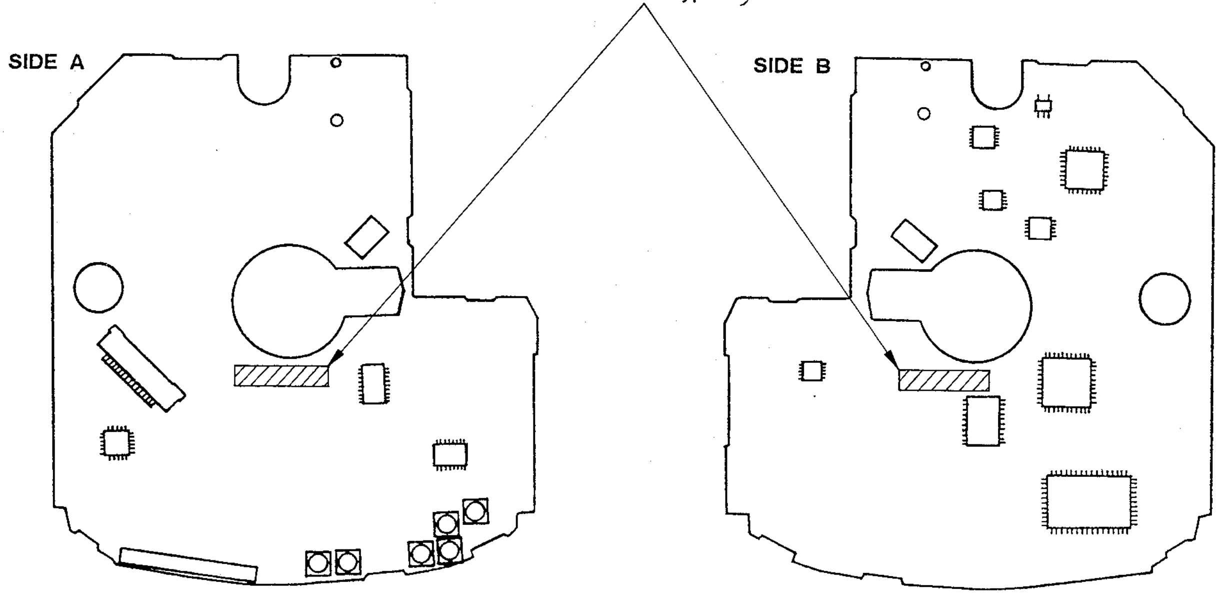
2. BOARD MODIFICATION

- **New/Former Discrimination**

1-652-256-11
1-652-256-12 } Former Type
1-653-955-11

1-654-572-11: Type A
1-654-572-12: Type B } New Type

– MAIN BOARD –



- **Serial No.**

D-131	AEP	132,201 and later
D-131	German	163,001 and later
D-131	UK	215,001 and later
D-131	French	174,801 and later
D-131	US	40,001 and later
D-130	AEP	10,001 and later
D-130	UK	13,451 and later

Before Replacing the Optical Pick-Up Block

Please be sure to check thoroughly the parameters as par the "Optical Pick-Up Block Checking Procedures" (Part No.: 9-960-027-11) issued separately before replacing the optical pick-up block.
Note and specifications required to check are given below.

- FOK output: IC501 ⑫ pin
  When checking FOK, remove the lead wire to disc motor.
- S curve P-to-P value: 2.5 Vp-p
  When checking S curve P-to-P value, remove the lead wire to disc motor.
- Adjusted part for focus gain adjustment: RV503
- RF signal P-to-P value: 0.7 – 1.3 Vp-p
- Traverse signal P-to-P value: 0.8 – 2.0 Vp-p
- The repairing grating holder is impossible.
- Adjusted part for tracking gain adjustment: RV504

2-1. SERVICE NOTE

Precautions for Checking Emission of Laser Diode

Laser light of the equipment is focused by the object lens in the optical pick-up so that the light focuses on the reflection surface of the disc. Therefore, be sure to keep your eyes more then 30 cm apart from the object lens when you check the emission of laser diode.

Laser Diode Checking Methods

During normal operation of the equipment, emission of the laser diode is prohibited unless the upper panel is closed while turning ON the S810 (push switch type).
The following two checking methods for the laser diode are operable.

- **Method-1 (In the service mode or normal operation):**
  Emission of the laser diode is visually checked.

1. Open the upper panel.
2. Push the S810 as shown in Fig. 1.
3. Check the object lens for confirming normal emission of the laser diode. If not emitting, there is a trouble in the automatic power control circuit or the optical pick-up.
   During normal operation, the laser diode is turned ON about 2.5 seconds for focus searching.

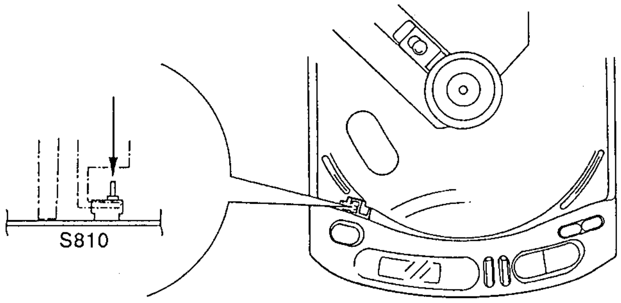
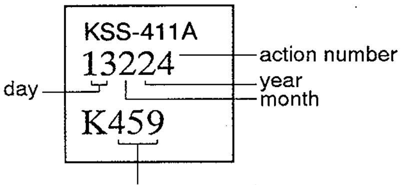


Fig. 1 Method to push the S810

- **Method-2 (In service mode or normal operation):**
  Check the value of current flowing in the laser diode.

1. Remove the upper panel.
2. Read the current printed on the label attached on the rear side of the optical pick-up.

(Label stuck outside of the optical pick-up)



Indicates current value.
(In this case, 45.9 mA)

3. Connect a VTVM as shown in Fig. 2.
4. Press the ▶❚❚ key.
5. Calculate current value by the reading of the VTVM.
   Reading of the tester (V) ÷ 1=current value (A)
   (Example) Reading of the VTVM of 0.046 V:
   0.046 V ÷ 1 Ω =0.046 (A) = 46 mA
6. Check that the current value is within the following range.
   - Current value of the label $^{+5}_{-11}$ mA (25 ℃)
     Variation by temperature: 0.4 mA/℃
     Current increases with temperature increased.
     Current decreases with temperature decreased.

   If the current is more than the range above, there is a trouble in the automatic power control circuit or the laser diode is in deterioration.
   If less than the range, a trouble exists in the automatic power control circuit or the optical pick-up.

– MAIN BOARD – (Side A)

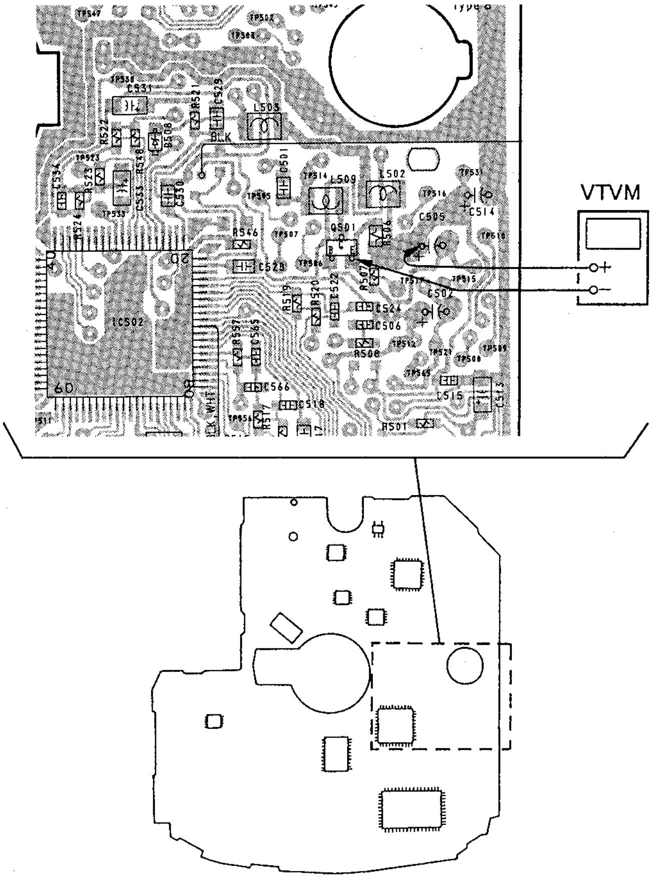


Fig. 2 VTVM connecting location

2-2. SERVICE MODE

• Step 1 (Service mode setting methods)

1. Turn OFF the HOLD switch with external power supply disconnected (power is not applied to the set).
2. Solder across the TEST terminals (pin ㉞ , IC801 (TEST) is grounded).
3. Connect an external power supply.

Thus, the set is switched to the service mode.

• Step 2 (Operation in the service mode)

1. Once the service mode is effected, the LCD displays 5 indications each of which is repeatedly displayed.
   However, the following operations can be activated even if LCD indication is effected.
2. By pressing the ▶▶| or |◀◀ key, the optical pick-up is movable inwardly or outwardly. However, if this is activated, tracking servo and sled servo are turned OFF, so it can be turned ON by pressing the PLAY MODE key if required.
3. By pressing the REPEAT/ENTER key, the display stops.
   With the key released, repeated indication is continued, so you can check each segment.
4. By pressing the ▶II key, focus is turned ON from focus searching while entering CLV-S (pull-in mode).
   Without disc, focus searching is repeated continuously.
5. By pressing the PLAY MODE key, tracking servo, sled servo and CLV-A (servo in PLAY) are turned ON.
6. When 4. and 5. are performed, playing begins. No muting is ON in the service mode.
7. By pressing the ■ key, all servos (focus, tracking and sled) are turned OFF. However, the disc motor revolves for a while by inertia.

• Step 3 (Resetting of service mode)

1. Be sure to disconnect the external power supply and remove the solder bridge at the TEST terminals connected before in setting.
2. The set thus becomes available for normal operation.

— MAIN BOARD — (Side A)

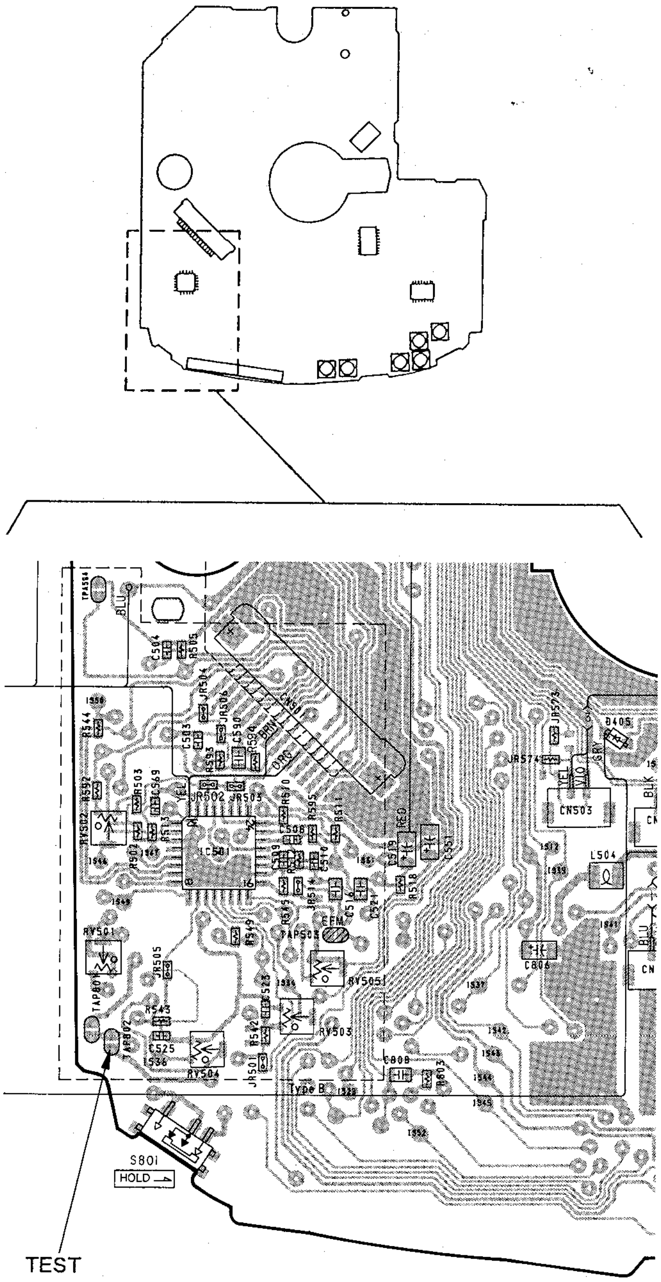


Fig. 3 Location of Test terminal

2-3. ELECTRICAL ADJUSTMENTS

CD SECTION

Precautions for Adjustment

1. Before beginning adjustment, set the equipment to service mode. After the completion of adjustment, be sure to reset the service mode. For more information, see "Service Mode (service program)" on pages 4.
2. Perform adjustments in the order given.
3. Use YEDS-18 disc (Part No.: 3-702-101-01) unless otherwise indicated.
4. Power supply voltage requirement.: DC4.5 V
   HOLD switch : OFF
   VOLUME switch : Minimum
   ESP switch : OFF
   BASS BOOST switch: NORM
   AVLS switch : OFF

Before Beginning Adjustment

Set the equipment to service mode (See page 4) and check the following. If there is an error, repair the equipment.

- **Checking of the sled motor**

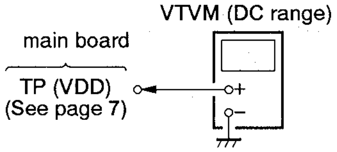
1. Open the upper panel.
2. Press the ▶▶| and |◀◀ keys and check that the optical pick-up can move smoothly without sluggishness or abnormal noise in innermost periphery → outermost periphery → innermost periphery.
   ▶▶| : The optical pick-up moves outwardly.
   |◀◀ : The optical pick-up moves inwardly.

- **Checking of focus searching**

1. Open the upper panel.
2. Press the ▶II key. (Focus searching operation is activated continuously.)
3. Check the object lens of the optical pick-up for smooth up/down motion without sluggishness or abnormal noise.
4. Press the ■ key.
   Check that focus searching operation is deactivated. If not, again press the ■ key slightly longer.

VDD Adjustment

Adjustment Procedure:

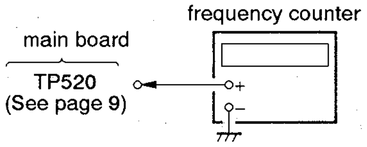


1. Set the equipment to service mode stop state. (See page 4.)
2. Connect the VTVM to TP (VDD) of the main board.
3. Adjust RV401 on the main board so that the reading on VTVM goes 3.325 ± 0.25 V.
4. After the completion of adjustment, reset service mode. (See page 4.)

Adjustment Location: Main Board

PLL Free Run Frequency Checking and Adjustment

Checking and Adjustment Procedure:



1. Unsolder the solder-bridge on Ⓐ (EFM) as shown in Adjusting Parts Location. (See page 7.)
2. Connect the frequency counter to the test point TP520 of the main board.
3. Set the equipment to service mode stop state. (See page 4.)
4. Confirm the reading on the frequency counter is 4.3518 ± 0.01 MHz. When it is out of order, Adjust RV505 to 4.3518 ± 0.01 MHz.
5. After the completion of adjustment, reset service mode. (See page 4.)
6. Short-circuit Ⓐ (EFM).

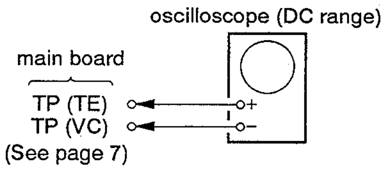
Checking and Adjustment Location: Main Board

Tracking Balance Adjustment

Condition:

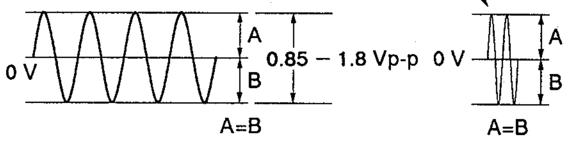
- Hold the set in horizontal state.

Adjustment Procedure:



1. Connect the oscilloscope to TP (TE) of the main board.
2. Set the equipment to service mode stop state. (See page 4.)
3. Move the optical pick-up by pressing the ▶▶| and |◀◀ keys.
4. Put the disc (YEDS-18).
5. Press the ▶II key.
   [From focus searching, focus is turned ON while entering CLV drawing-in mode. Tracking and sled are turned OFF.]
6. Adjust RV502 so that the waveform on the oscilloscope becomes up/down symmetrical with an axis of 0 V.

Note: Take long sweep time for easy monitoring.



7. Stop removing of the disc motor by pressing the ■ key.
8. After the completion of adjustment, reset service mode. (See page 4.)

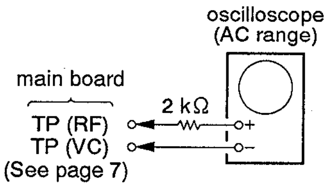
Adjustment Location: Main Board

Focus Bias Adjustment

Condition:

- Hold the set in horizontal state.

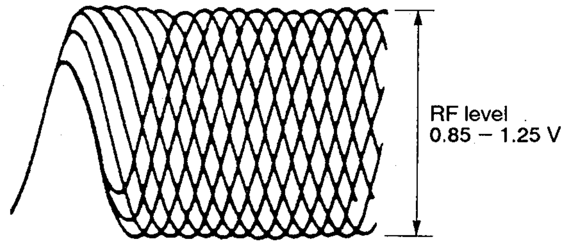
Adjustment Procedure:



1. Set the equipment to service mode stop state. (See page 4.)
2. Connect the oscilloscope to the test point TP (RF) of the main board.
3. Move the optical pick-up by pressing the ▶▶| and |◀◀ keys.
4. Put the disc (YEDS-18).
5. Put the ▶II key.
   [From focus searching, focus is turned ON while entering CLV drawing-in mode. Tracking and sled are turned OFF.]
6. Press the PLAY MODE key. (Both tracking and sled are turned ON.)
7. Adjust RV501 so that the eye pattern in the waveform of the oscilloscope is clealy displayed. "Clear display of the eye pattern" means that the ◇ shape can be clearly discriminated at the center of the waveform.

RF SIGNAL REFERENCE WAVEFORM (EYE PATTERN)

VOLT DIV : 200 mV (With the 10:1 probe in use)
TIME DIV : 500 ns

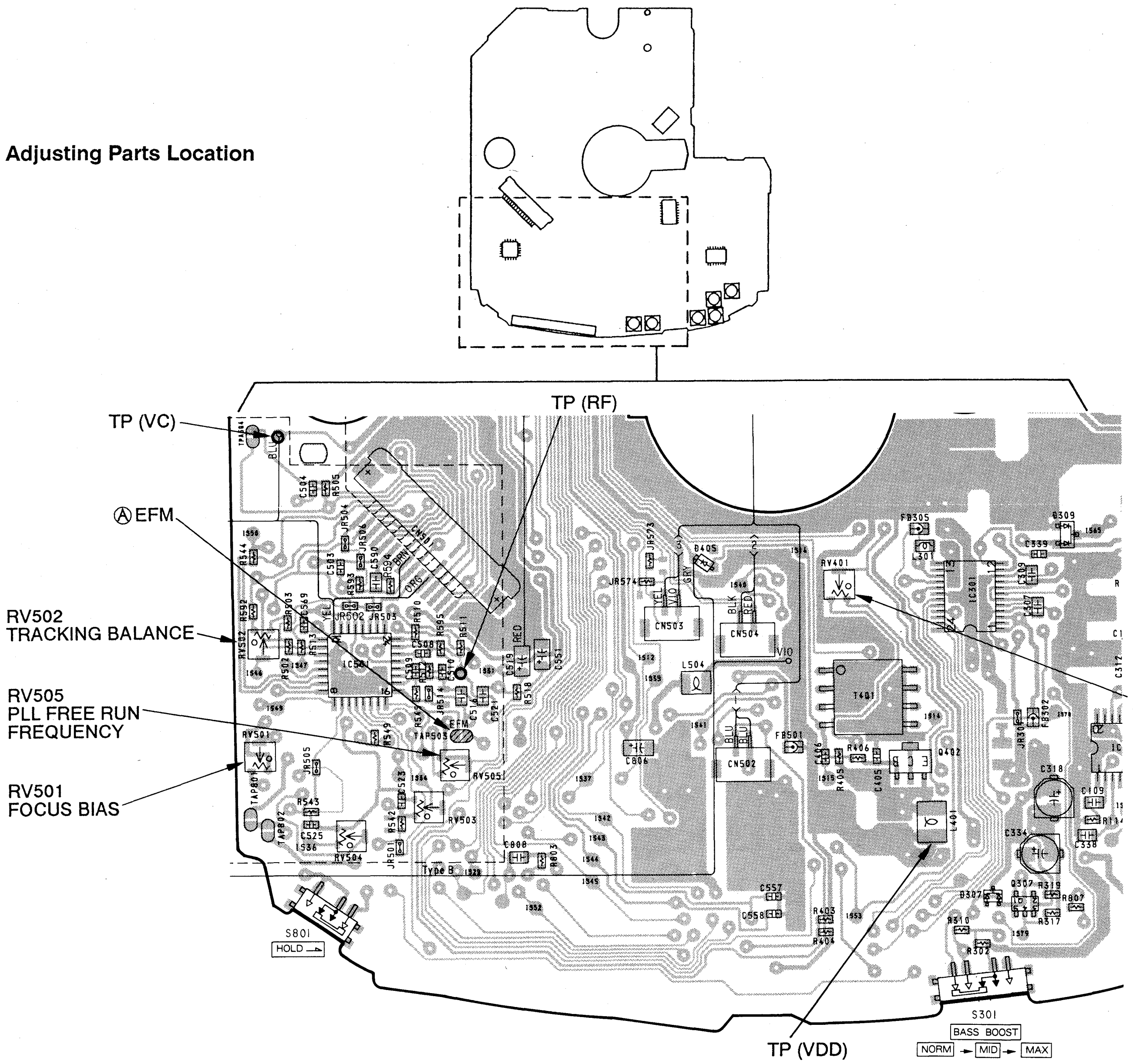


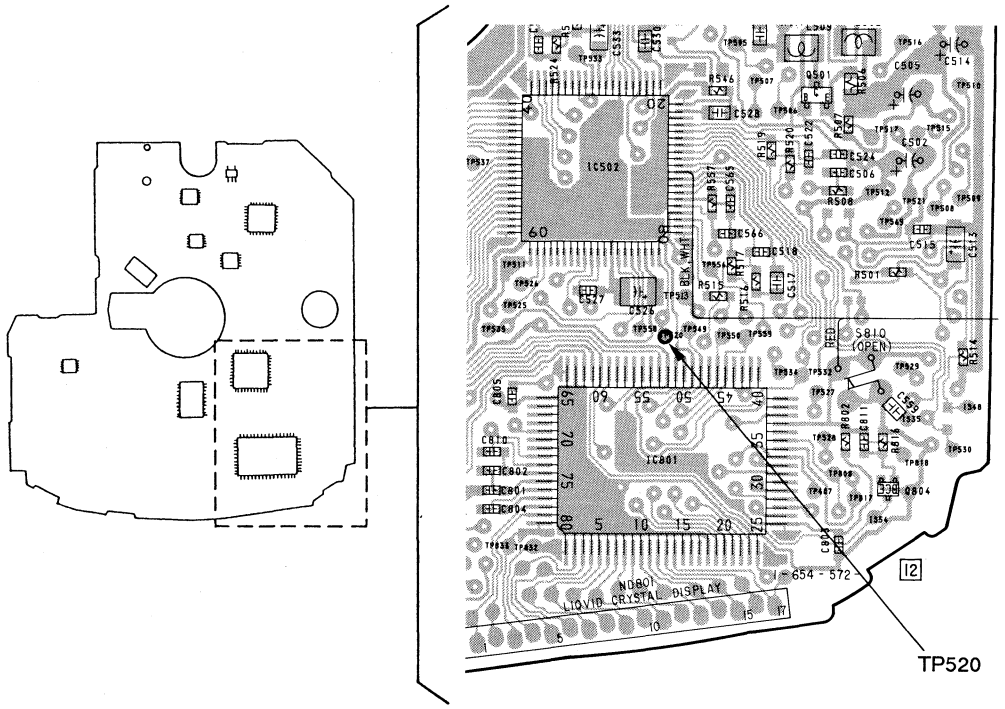
To watch the eye pattern, set the oscilloscope to AC range and increase the vertical sensitivity of the oscilloscope for easy watching.

8. Stop revolving of the disc motor by pressing the ■ key.
9. After the completion of adjustment, reset service mode. (See page 4.)

Adjustment Location: Main Board

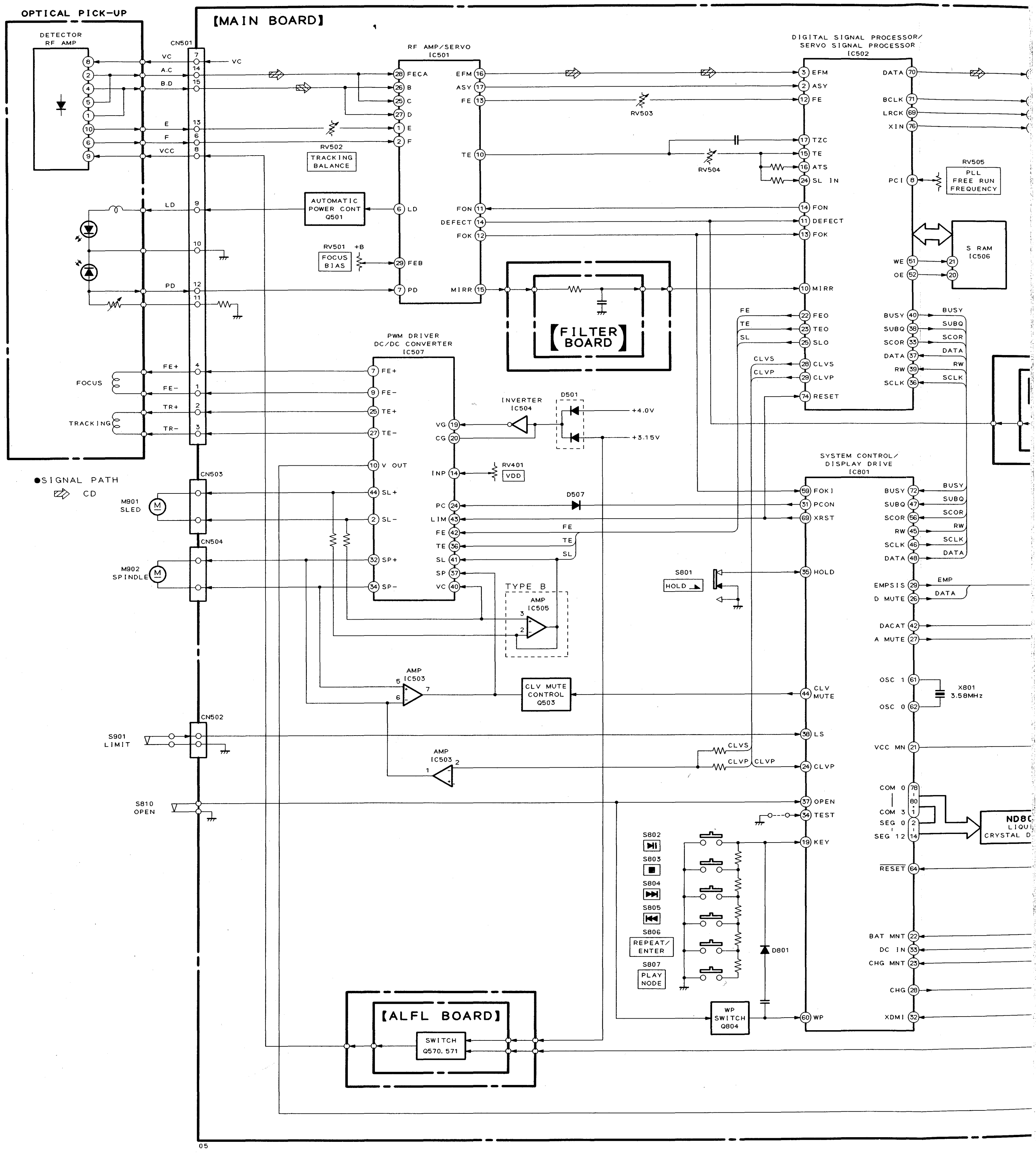
Adjusting Parts Location


TP (VC)
TP (RF)
Ⓐ EFM
RV502
TRACKING BALANCE
RV505
PLL FREE RUN
FREQUENCY
RV501
FOCUS BIAS
RV401
VDD
TP (VDD)
S801
HOLD
S301
BASS BOOST
NORM → MID → MAX


IC502
IC801
ND801
LIQUID CRYSTAL DISPLAY
S810 (OPEN)
TP520

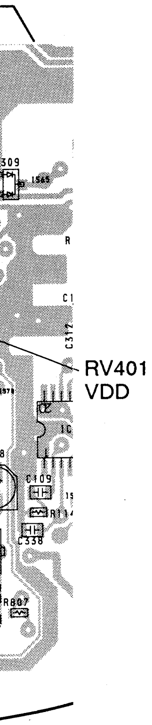
2-4. DIAGRAMS

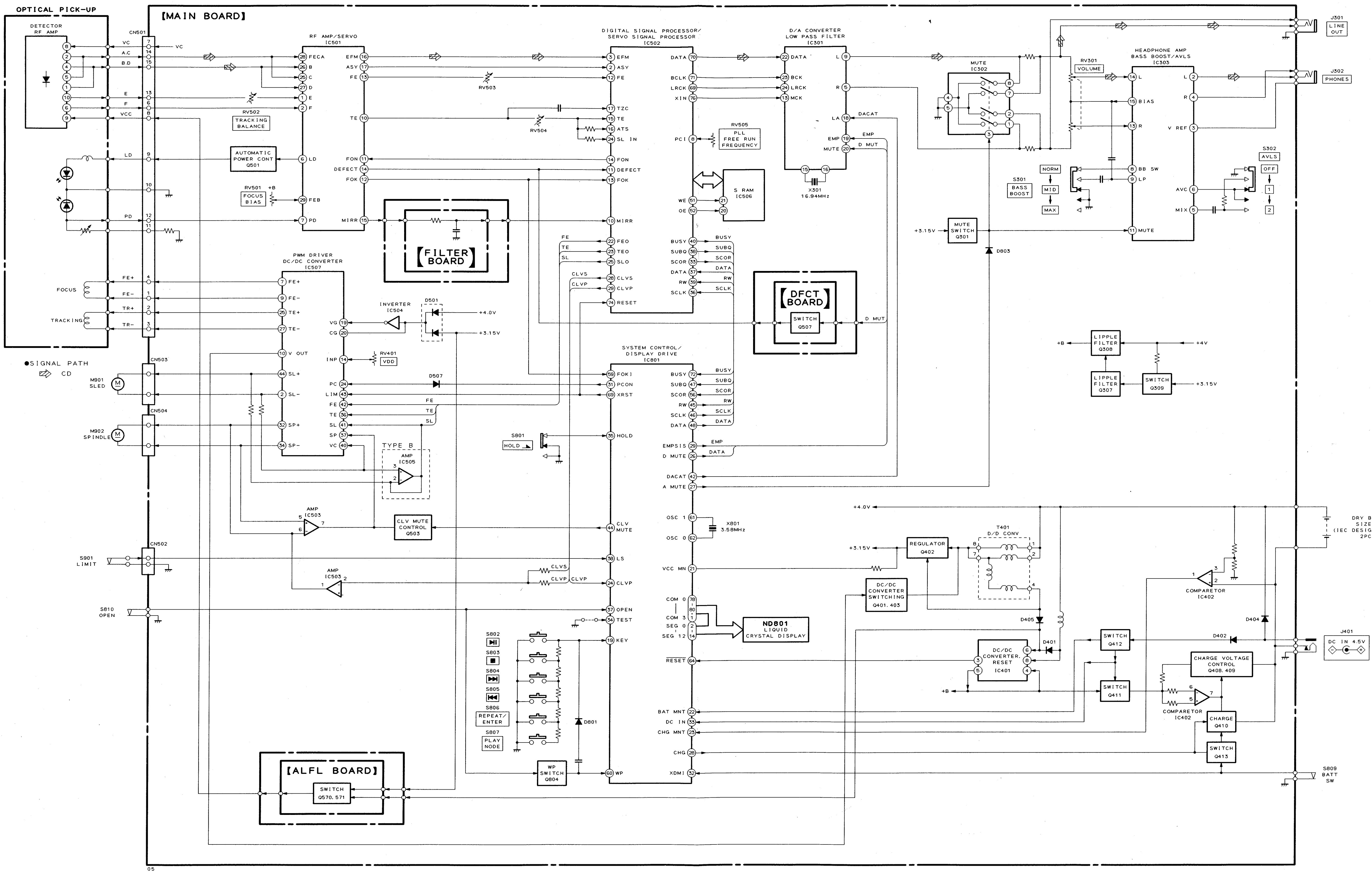
2-4-1. BLOCK DIAGRAM


OPTICAL PICK-UP
DETECTOR
RF AMP
[MAIN BOARD]
CN501
VC
A.C
B.D
E
F
VCC
LD
PD
RF AMP/SERVO
IC501
FECA
B
C
D
E
F
EFM
ASY
FE
TE
LD
FEB
PD
FON
DEFECT
FOK
MIRR
RV502
TRACKING
BALANCE
AUTOMATIC
POWER CONT
Q501
RV501
FOCUS
BIAS
RV503
RV504
[FILTER BOARD]
DIGITAL SIGNAL PROCESSOR/
SERVO SIGNAL PROCESSOR
IC502
EFM
ASY
FE
TZC
TE
ATS
SL IN
FON
DEFECT
FOK
MIRR
FEO
TEO
SLO
CLVS
CLVP
RESET
DATA
BCLK
LRCK
XIN
PCI
RV505
PLL
FREE RUN
FREQUENCY
S RAM
IC506
WE
OE
BUSY
SUBQ
SCOR
DATA
RW
SCLK
FOCUS
TRACKING
FE+
FE-
TR+
TR-
PWM DRIVER
DC/DC CONVERTER
IC507
VG
CG
V OUT
INP
SL+
SL-
PC
LIM
SP+
SP-
SP
VC
INVERTER
IC504
D501
+4.0V
+3.15V
RV401
VDD
D507
TYPE B
AMP
IC505
AMP
IC503
CLV MUTE
CONTROL
Q503
CN503
M901
SLED
CN504
M902
SPINDLE
CN502
S901
LIMIT
S810
OPEN
SYSTEM CONTROL/
DISPLAY DRIVE
IC801
FOKI
PCON
XRST
HOLD
CLV MUTE
LS
CLVP
OPEN
TEST
KEY
WP
S801
HOLD
S802 ▶II
S803 ■
S804 ▶▶I
S805 I◀◀
S806
REPEAT/
ENTER
S807
PLAY
MODE
D801
WP
SWITCH
Q804
EMPSIS
D MUTE
DACAT
A MUTE
OSC 1
OSC 0
X801
3.58MHz
VCC MN
COM 0
COM 3
SEG 0
SEG 12
RESET
BAT MNT
DC IN
CHG MNT
CHG
XDMI
EMP
ND80
LIQUI
CRYSTAL D
[ALFL BOARD]
SWITCH
Q570, 571
●SIGNAL PATH
CD

2-4. DIAGRAMS

2-4-1. BLOCK DIAGRAM

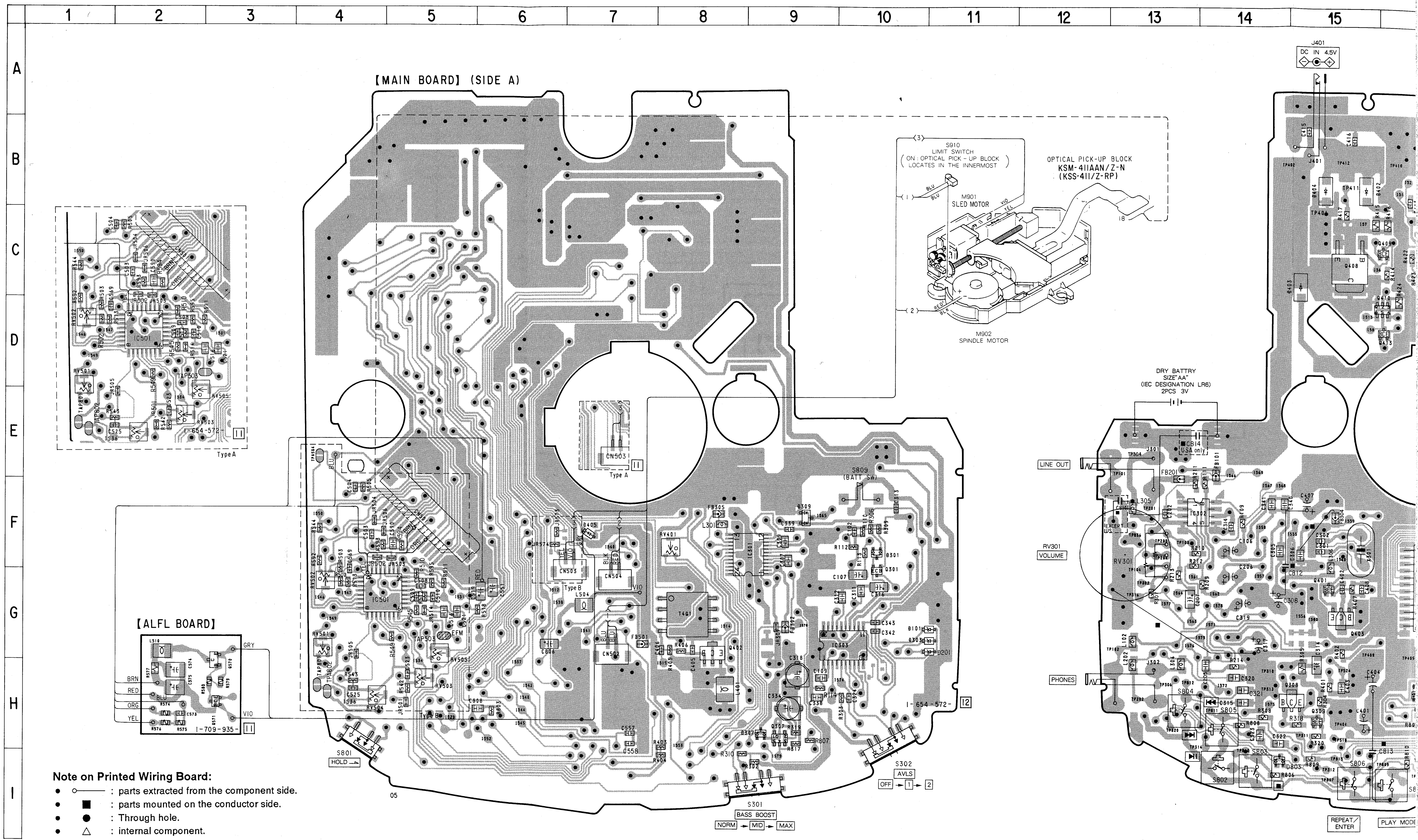

RV401
VDD
C109
R807


OPTICAL PICK-UP
DETECTOR
RF AMP
FOCUS
TRACKING
【MAIN BOARD】
CN501
VC
A.C
B.D
E
F
VCC
LD
PD
FE+
FE-
TR+
TR-
CN503
M901
SLED
CN504
M902
SPINDLE
CN502
S901
LIMIT
S810
OPEN
●SIGNAL PATH
CD
RF AMP/SERVO
IC501
FECA
B
C
D
E
F
EFM
ASY
FE
TE
FON
DEFECT
FOK
FEB
MIRR
RV502
TRACKING
BALANCE
AUTOMATIC
POWER CONT
Q501
RV501
FOCUS
BIAS
+B
RV503
RV504
【FILTER BOARD】
PWM DRIVER
DC/DC CONVERTER
IC507
FE+
FE-
TE+
TE-
V OUT
SL+
SL-
SP+
SP-
VG
CG
INP
PC
LIM
FE
TE
SL
SP
VC
INVERTER
IC504
D501
+4.0V
+3.15V
RV401
VDD
D507
TYPE B
AMP
IC505
AMP
IC503
CLV MUTE
CONTROL
Q503
DIGITAL SIGNAL PROCESSOR/
SERVO SIGNAL PROCESSOR
IC502
EFM
ASY
FE
TZC
TE
ATS
SL IN
FON
DEFECT
FOK
MIRR
FEO
TEO
SLO
CLVS
CLVP
RESET
DATA
BCLK
LRCK
XIN
PCI
WE
OE
BUSY
SUBQ
SCOR
DATA
RW
SCLK
RV505
PLL
FREE RUN
FREQUENCY
S RAM
IC506
【DFCT BOARD】
SWITCH
Q507
D MUT
D/A CONVERTER
LOW PASS FILTER
IC301
BCK
LRCK
MCK
L
R
LA
EMP
MUTE
DACAT
X301
16.94MHz
MUTE
IC302
RV301
VOLUME
HEADPHONE AMP
BASS BOOST/AVLS
IC303
BIAS
V REF
BB SW
LP
AVC
MIX
MUTE
J301
LINE
OUT
J302
PHONES
S301
BASS
BOOST
NORM
MID
MAX
S302
AVLS
OFF
1
2
+3.15V
MUTE
SWITCH
Q301
D803
LIPPLE
FILTER
Q308
LIPPLE
FILTER
Q307
SWITCH
Q309
+B
+4V
+3.15V
SYSTEM CONTROL/
DISPLAY DRIVE
IC801
FOKI
PCON
XRST
HOLD
CLV MUTE
LS
CLVP
OPEN
TEST
KEY
WP
BUSY
SUBQ
SCOR
RW
SCLK
DATA
EMPSIS
D MUTE
DACAT
A MUTE
OSC I
OSC O
X801
3.58MHz
VCC MN
COM 0
COM 3
SEG 0
SEG 12
ND801
LIQUID
CRYSTAL DISPLAY
RESET
BAT MNT
DC IN
CHG MNT
CHG
XDMI
S801
HOLD
S802
S803
S804
S805
S806
REPEAT/
ENTER
S807
PLAY
MODE
D801
WP
SWITCH
Q804
【ALFL BOARD】
SWITCH
Q570, 571
+4.0V
+3.15V
REGULATOR
Q402
T401
D/D CONV
DC/DC
CONVERTER
SWITCHING
Q401, 403
D405
D401
DC/DC
CONVERTER,
RESET
IC401
+B
SWITCH
Q412
SWITCH
Q411
D402
D404
COMPARETOR
IC402
CHARGE VOLTAGE
CONTROL
Q408, 409
CHARGE
Q410
SWITCH
Q413
DRY BATTERY
SIZE "AA"
(IEC DESIGNATION LR6)
2PCS 3V
J401
DC IN 4.5V
S809
BATT
SW
05

2-4-2. PRINTED WIRING BOARDS • See page 17 for Semiconductor Lead Layouts.

- **Semiconductor Location**

Ref. No.	Location
D101	G-10
D201	G-10
D301	F-10
D303	G-10
D307	H-9
D309	F-9
D401	D-17
D402	B-15
D403	C-15
D404	B-15
D405	F-7
D501	B-17
D502	B-17
D503	B-18
D506	B-18
D507	C-18
D508	E-18
D801	H-16
D802	H-16
D803	I-14
IC301	F-9
IC302	F-13
IC303	G-10
IC401	D-16
IC402	B-16
IC501	G-4
IC502	F-17
IC503	D-17
IC504	B-17
IC505	D-19(Type B only)
IC506	G-16
IC507	C-18
IC801	H-18
Q301	G-10
Q307	H-9
Q308	H-15
Q309	H-15
Q401	G-15
Q402	G-8
Q403	G-15
Q408	C-15
Q409	C-16
Q410	D-16
Q411	C-16
Q412	C-16
Q413	D-16
Q501	F-19
Q503	D-19
Q507	H-21
Q570	H-3
Q571	H-3
Q804	H-19


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
A
B
C
D
E
F
G
H
I
【MAIN BOARD】 (SIDE A)
【ALFL BOARD】
1-709-935- 11
1-654-572- 11
1-654-572- 12
Type A
Type B
J401
DC IN 4.5V
S910
LIMIT SWITCH
(ON : OPTICAL PICK-UP BLOCK LOCATES IN THE INNERMOST)
OPTICAL PICK-UP BLOCK
KSM-411AAN/Z-N
(KSS-411/Z-RP)
M901
SLED MOTOR
M902
SPINDLE MOTOR
DRY BATTERY
SIZE"AA"
(IEC DESIGNATION LR6)
2PCS 3V
LINE OUT
RV301
VOLUME
PHONES
S809
(BATT SW)
S801
HOLD
S301
BASS BOOST
NORM MID MAX
S302
AVLS
OFF 1 2
REPEAT/ENTER
PLAY MODE
IC501
IC301
IC302
IC303
CN503
CN504
CN502
T401
RV401
RV501
RV503
RV504
RV505
EFM
BRN
RED
ORG
YEL
GRY
VIO
BLU
BLK
05

Note on Printed Wiring Board:

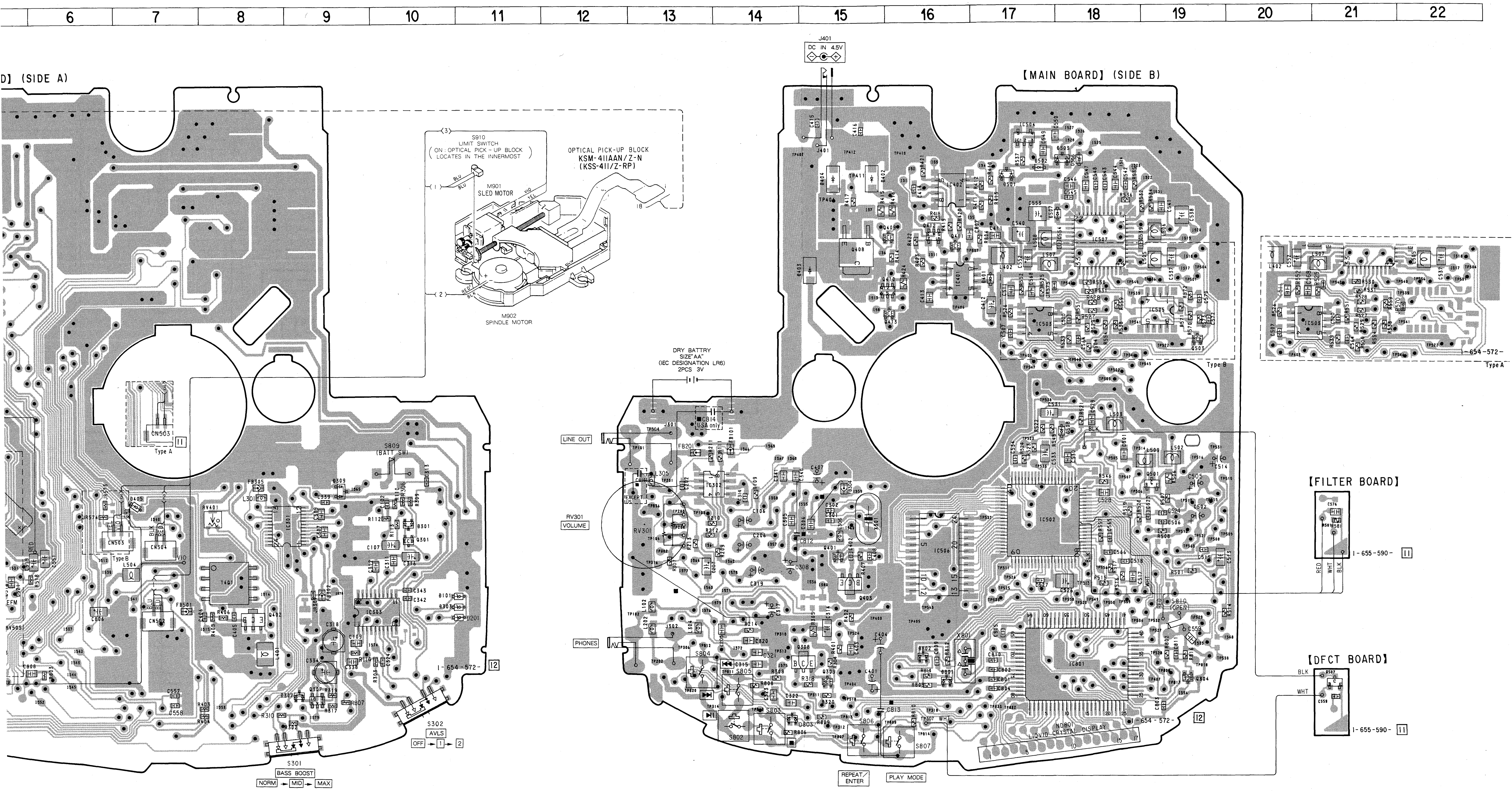
- ○——— : parts extracted from the component side.
- ■ : parts mounted on the conductor side.
- ● : Through hole.
- △ : internal component.
- ▨ : Pattern from the side which enables seeing.

(The other layers' patterns are not indicated.)

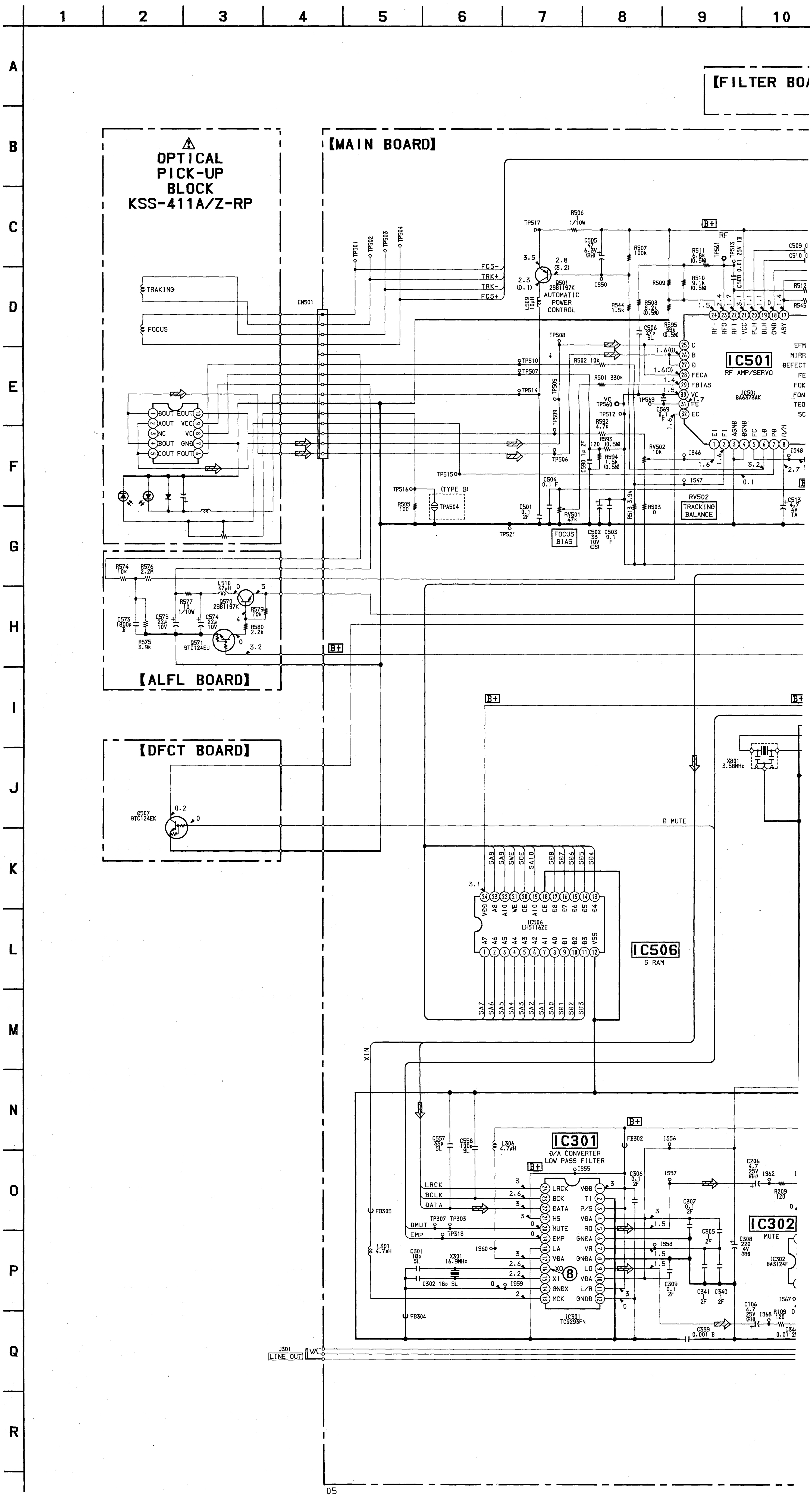
Caution:

Pattern face side: (SIDE B)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (SIDE A)	Parts on the parts face side seen from the parts face are indicated.

ead Layouts.


6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
D] (SIDE A)
S910
LIMIT SWITCH
(ON : OPTICAL PICK - UP BLOCK LOCATES IN THE INNERMOST)
OPTICAL PICK-UP BLOCK
KSM-411AAN/Z-N
(KSS-411/Z-RP)
M901
SLED MOTOR
M902
SPINDLE MOTOR
CN503
Type A
Type B
S809
(BATT SW)
RV401
T401
IC301
IC303
1-654-572- 12
S301
BASS BOOST
NORM → MID → MAX
S302
AVLS
OFF → 1 → 2
J401
DC IN 4.5V
【MAIN BOARD】 (SIDE B)
DRY BATTERY
SIZE"AA"
(IEC DESIGNATION LR6)
2PCS 3V
LINE OUT
RV301
VOLUME
EXCEPT US
USA only
PHONES
IC302
IC401
IC402
IC502
IC503
IC505
IC506
IC507
IC801
X801
S802
S803
S804
S805
S806
S807
S810 (OPEN)
REPEAT/ ENTER
PLAY MODE
ND801
LIQUID CRYSTAL DISPLAY
654-572- 12
1-654-572- 11
Type A
【FILTER BOARD】
RED
WHT
BLK
1-655-590- 11
【DFCT BOARD】
BLK
WHT
1-655-590- 11

2-4-3. SCHEMATIC DIAGRAM • See page 18 and 19 for IC Block Diagrams.

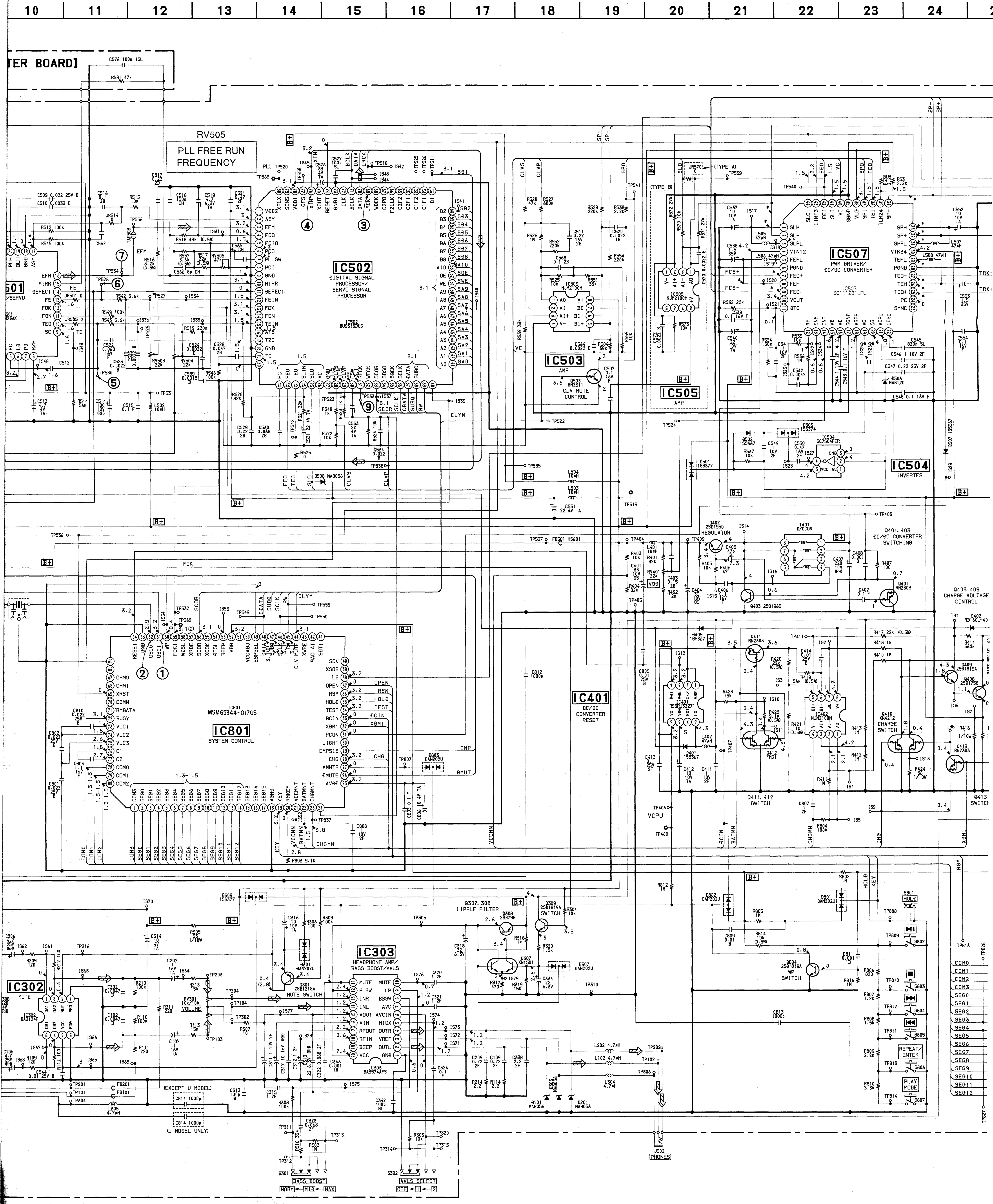

1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
OPTICAL PICK-UP BLOCK KSS-411A/Z-RP
TRAKING
FOCUS
[MAIN BOARD]
[FILTER BO
CN501
FCS-
TRK+
TRK-
FCS+
Q501 2SB1197K AUTOMATIC POWER CONTROL
IC501 RF AMP/SERVO
IC501 BA6373AK
RV501 47k
FOCUS BIAS
RV502 TRACKING BALANCE
[ALFL BOARD]
Q570 2SB1197K
Q571 DTC124EU
[DFCT BOARD]
Q507 DTC124EK
X801 3.58MHz
B MUTE
IC506 S RAM
IC506 LH5116ZE
XIN
IC301 D/A CONVERTER LOW PASS FILTER
IC301 TC9293FN
X301 16.9MHz
LRCK
BCLK
DATA
DMUT
EMP
IC302 MUTE
IC302 BA3124F
J301 LINE OUT
B+

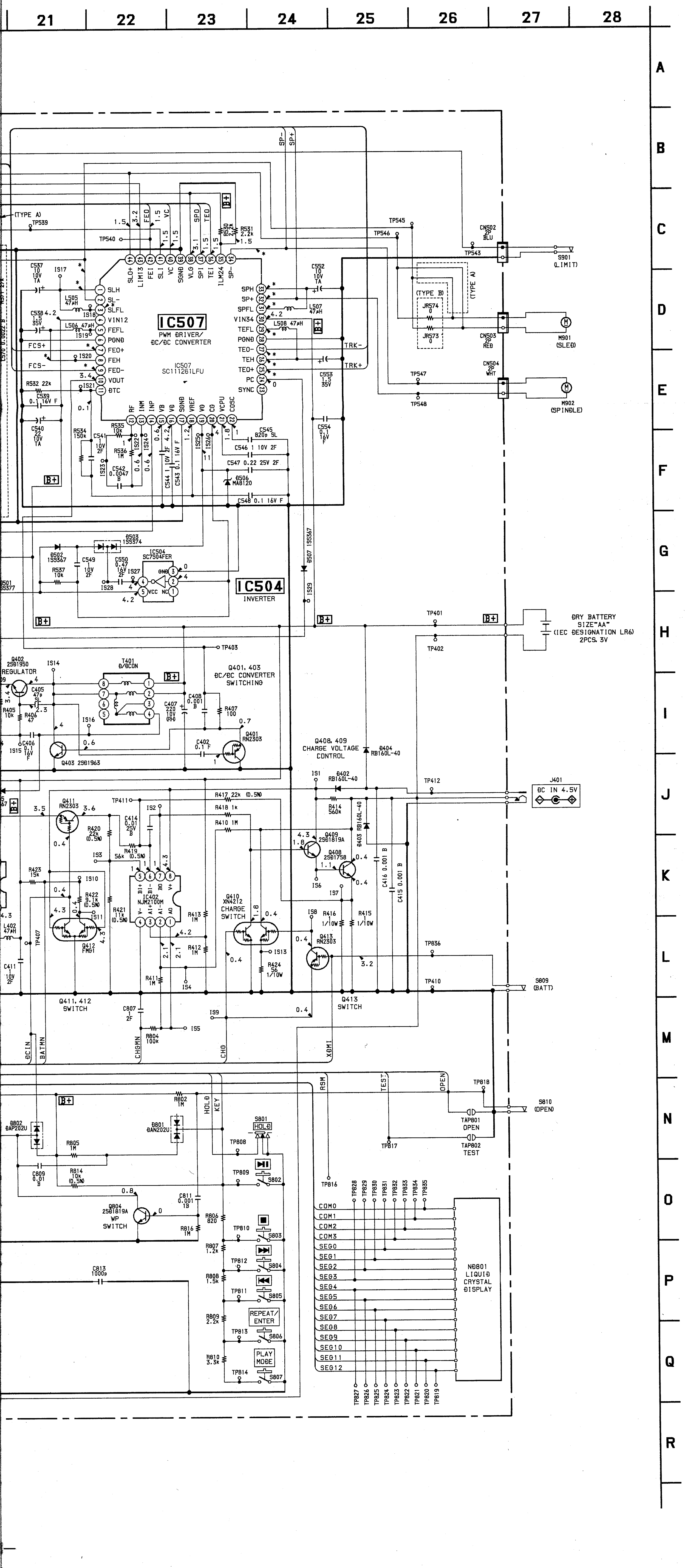
Note on Schematic Diagram:

- All capacitors are in μF unless otherwise noted. pF: μμF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼ W or less unless otherwise specified.
- △ : internal component.

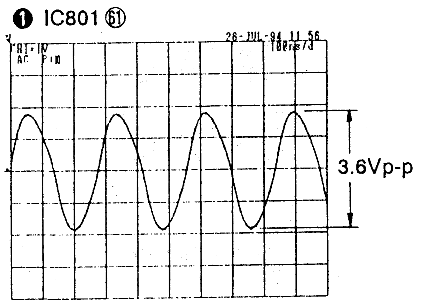
Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

- B+ : B + Line.
- ☐ : panel designation.
- ☐ : adjustment for repair.
- Power voltage is dc 4.5 V and fed with regulated dc power supply from external power voltage jack.
- Voltages and waveforms are dc with respect to ground under playing back conditions in service mode.
  no mark : PLAY
  ( ) : STOP
- Voltages are taken with a VOM (10 MΩ/V).
  Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope.
  Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  ⇨ : CD

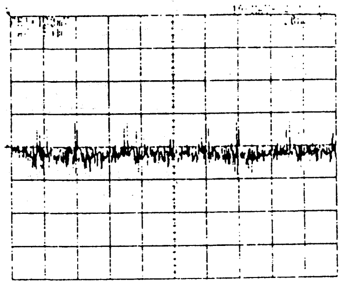

10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
TER BOARD】
RV505
PLL FREE RUN
FREQUENCY
IC502
DIGITAL SIGNAL PROCESSOR/
SERVO SIGNAL PROCESSOR
IC502
BU9310BKS
IC503
AMP
IC503
NJM2100M
Q503
RN2311
CLV MUTE
CONTROL
IC505
AMP
IC505
NJM2100M
IC507
PWM DRIVER/
DC/DC CONVERTER
IC507
SC111261LFU
IC504
INVERTER
IC504
SC7S04FER
Q402
2SB1950
REGULATOR
T401
D/DCON
Q401, 403
DC/DC CONVERTER
SWITCHING
Q403 2SB1963
Q408, 409
CHARGE VOLTAGE
CONTROL
IC401
DC/DC
CONVERTER
RESET
IC401
RS5RJ3227I
IC402
NJM2100M
Q410
XN4212
CHARGE
SWITCH
Q411, 412
SWITCH
Q413
SWITCH
IC801
MSM65344-017GS
IC801
SYSTEM CONTROL
IC302
MUTE
IC302
BA3124F
RV301
10k/10k
VOLUME
Q301
2SB1218A
MUTE SWITCH
IC303
HEADPHONE AMP/
BASS BOOST/AVLS
IC303
BA3574AFS
Q307, 308
LIPPLE FILTER
Q309
2SB1819A
SWITCH
Q804
2SB1819A
WP
SWITCH
S801
HOLD
S802
S803
S804
S805
S806
REPEAT/
ENTER
S807
PLAY
MODE
S301
BASS BOOST
NORM
MID
MAX
S302
AVLS SELECT
OFF
1
2
J302
PHONES
(EXCEPT U MODEL)
C814 1000p
C814 1000p
(U MODEL ONLY)
(TYPE A)
(TYPE B)
VCPU
COM0
COM1
COM2
COM3
SEG0
SEG1
SEG2
SEG3
SEG4
SEG5
SEG6
SEG7
SEG8
SEG9
SEG10
SEG11
SEG12


21
22
23
24
25
26
27
28
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
IC507
PWM DRIVER/
DC/DC CONVERTER
IC507
SC111261LFU
IC504
INVERTER
CN502 2P BLU
S901 (LIMIT)
CN503 2P RED
M901 (SLED)
CN504 2P WHT
M902 (SPINDLE)
DRY BATTERY
SIZE"AA"
(IEC DESIGNATION LR6)
2PCS. 3V
Q401, 403
DC/DC CONVERTER
SWITCHING
Q408, 409
CHARGE VOLTAGE
CONTROL
J401
DC IN 4.5V
Q410
XN4212
CHARGE
SWITCH
Q411, 412
SWITCH
Q413
SWITCH
S809 (BATT)
S810 (OPEN)
Q804
2SB1819A
WP
SWITCH
S801 HOLD
S802
S803
S804
S805
REPEAT/ENTER
S806
PLAY MODE
S807
ND801
LIQUID
CRYSTAL
DISPLAY
TAP801 OPEN
TAP802 TEST

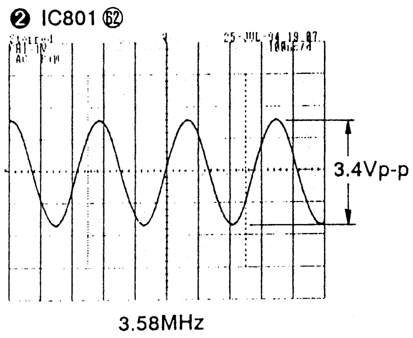
• Wave forms



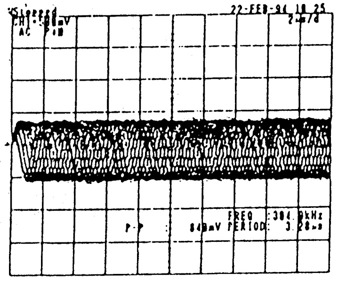
❶ IC801 (61)



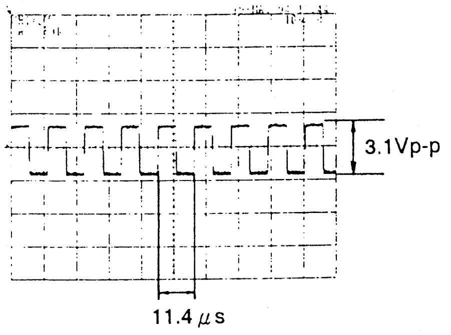
❻ TP FE 100mV/DIV 20ns/DIV



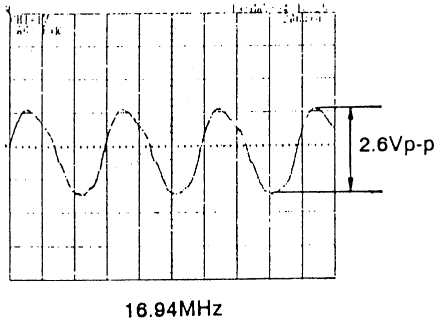
❷ IC801 (62)



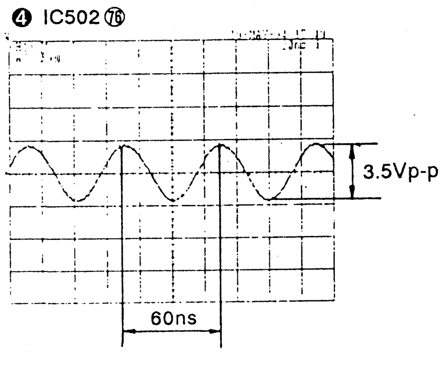
❼ IC501 ⑯ 500mV/DIV 2 µs/DIV



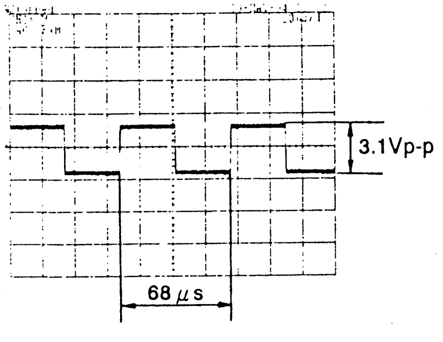
❸ IC502 (69)



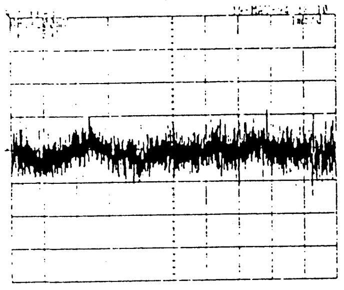
❽ IC301 ⑯



❹ IC502 (76)



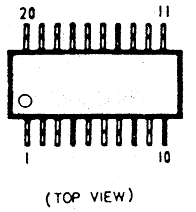
❾ IC502 (51)



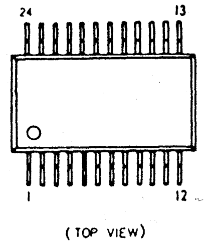
❺ TP TE 200mV/DIV 1ms/DIV

• Semiconductor Lead Layouts

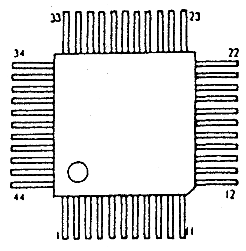
BA3574AFS-T1


20
11
1
10
(TOP VIEW)

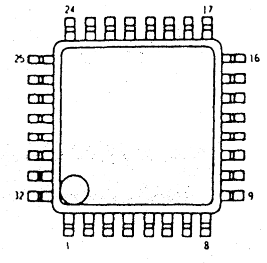
LH5116ZE
TC9293FN-EL


24
13
1
12
(TOP VIEW)

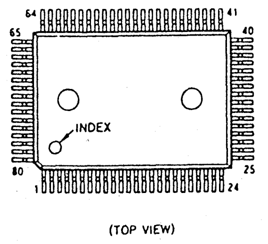
SC111281LFU


33
23
34
22
44
12
1
11

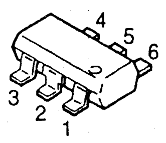
BA6373AK


24
17
25
16
32
9
1
8

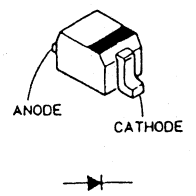
MSM65344-017GS-V1K


64
41
65
40
80
25
1
24
INDEX
(TOP VIEW)

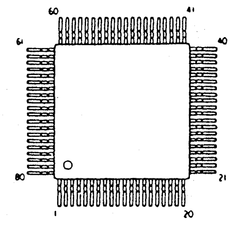
XN4212



DTZ12
1SS367


ANODE
CATHODE

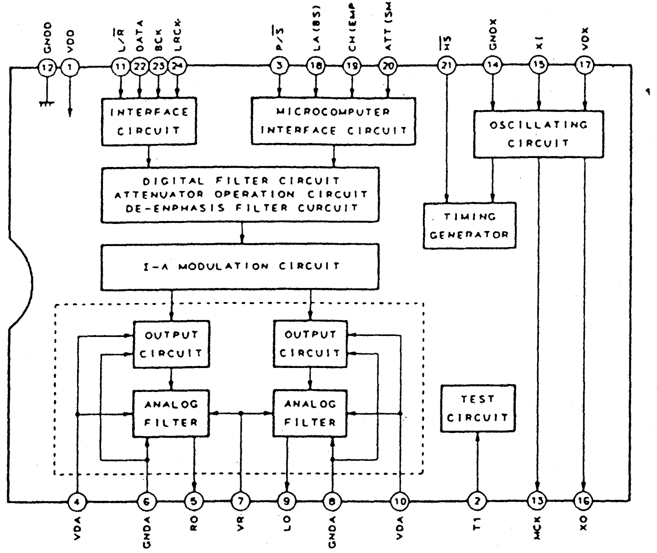
BU9310BKS


60
41
61
40
80
21
1
20

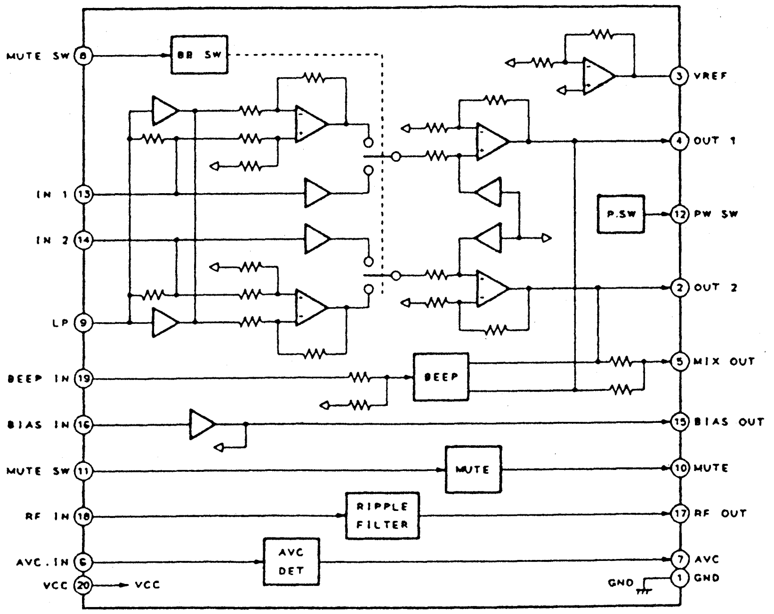
• IC Block Diagrams

MAIN BOARD

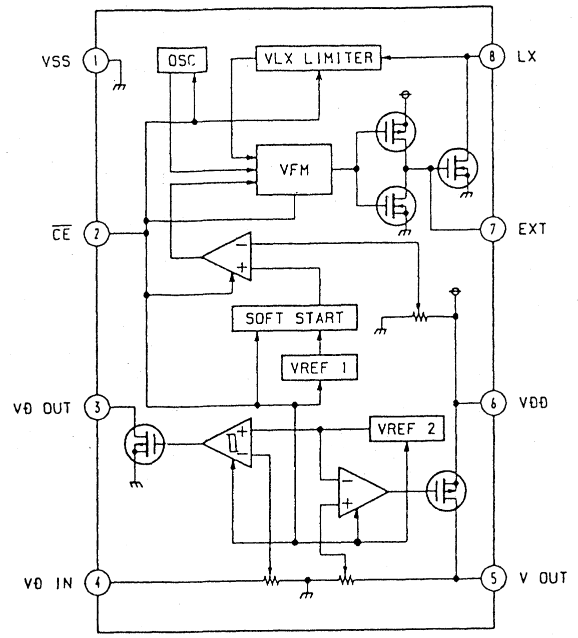
IC301 TC9293FN-EL


GNDD
VDD
L/R̄
DATA
BCK
LRCK
P/S̄
LA(BS)
CH(EMP)
ATT(SM)
H̄S̄
GNDX
XI
VDX
12
1
11
22
23
24
3
18
19
20
21
14
15
17
INTERFACE CIRCUIT
MICROCOMPUTER INTERFACE CIRCUIT
OSCILLATING CIRCUIT
DIGITAL FILTER CIRCUIT
ATTENUATOR OPERATION CIRCUIT
DE-ENPHASIS FILTER CURCUIT
TIMING GENERATOR
I-A MODULATION CIRCUIT
OUTPUT CIRCUIT
OUTPUT CIRCUIT
ANALOG FILTER
ANALOG FILTER
TEST CIRCUIT
4
6
5
7
9
8
10
2
13
16
VDA
GNDA
RO
VR
LO
GNDA
VDA
T1
MCK
XO

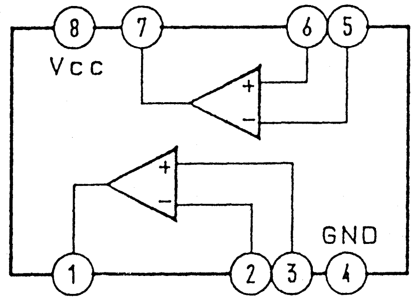
IC303 BA3574AFS-T1


MUTE SW 8
IN 1 13
IN 2 14
LP 9
BEEP IN 19
BIAS IN 16
MUTE SW 11
RF IN 18
AVC.IN 6
VCC 20
VCC
BB SW
P.SW
BEEP
MUTE
RIPPLE FILTER
AVC DET
3 VREF
4 OUT 1
12 PW SW
2 OUT 2
5 MIX OUT
15 BIAS OUT
10 MUTE
17 RF OUT
7 AVC
1 GND
GND

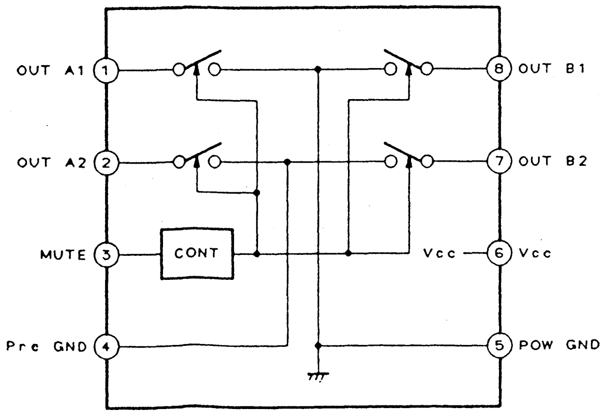
IC401 RS5RJ32271-T1


VSS 1
CE 2
VD OUT 3
VD IN 4
OSC
VLX LIMITER
VFM
SOFT START
VREF 1
VREF 2
8 LX
7 EXT
6 VDD
5 V OUT

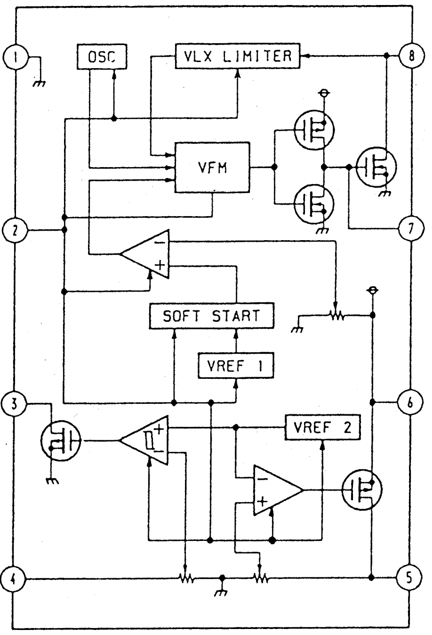
IC402, 503 NJM2100M


8
7
6
5
Vcc
1
2
3
4
GND

IC302 BA3124F-T1

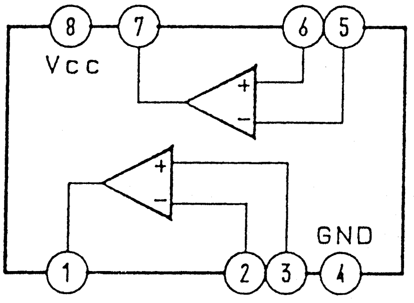

OUT A1 1
OUT A2 2
MUTE 3
Pre GND 4
CONT
Vcc
8 OUT B1
7 OUT B2
6 Vcc
5 POW GND

IC401 RS5RJ32271-T1



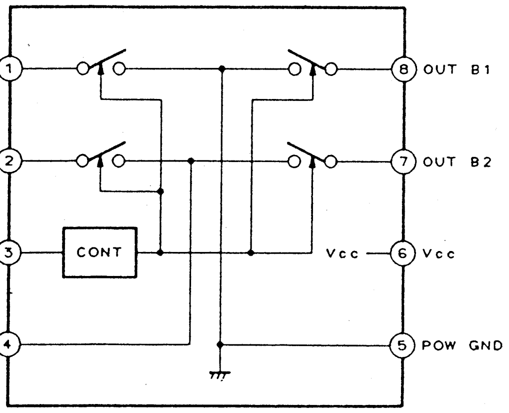
OSC
VLX LIMITER
VFM
SOFT START
VREF 1
VREF 2
LX
EXT
VDD
V OUT
1
2
3
4
5
6
7
8

IC402, 503 NJM2100M



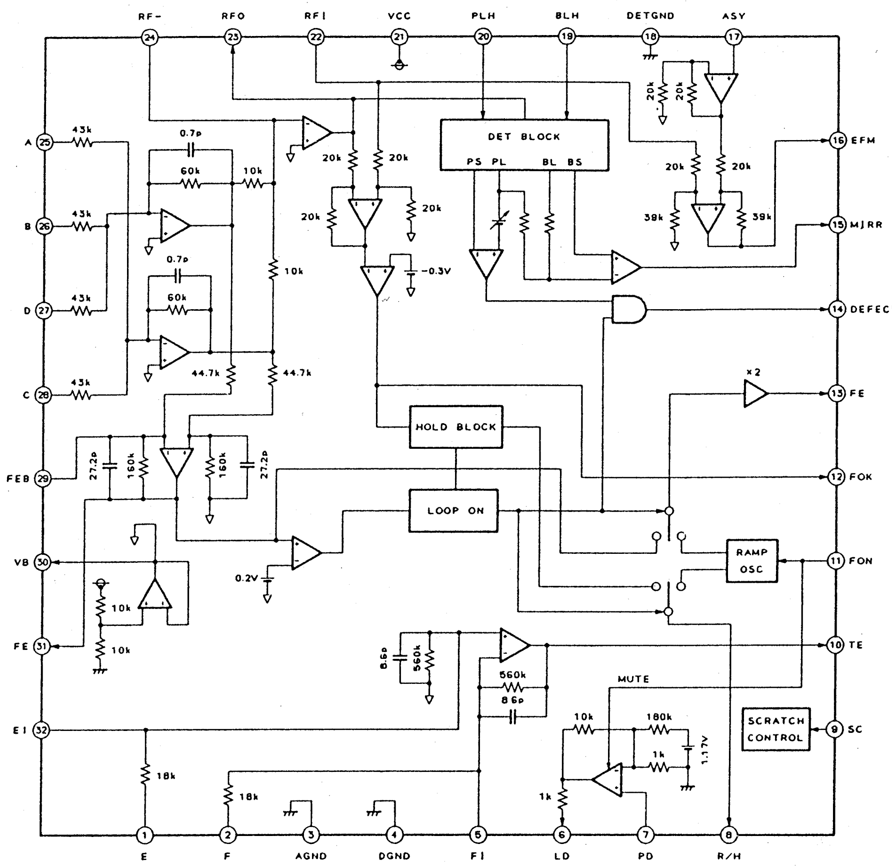
8
7
6
5
Vcc
GND
1
2
3
4

IC302 BA3124F-T1



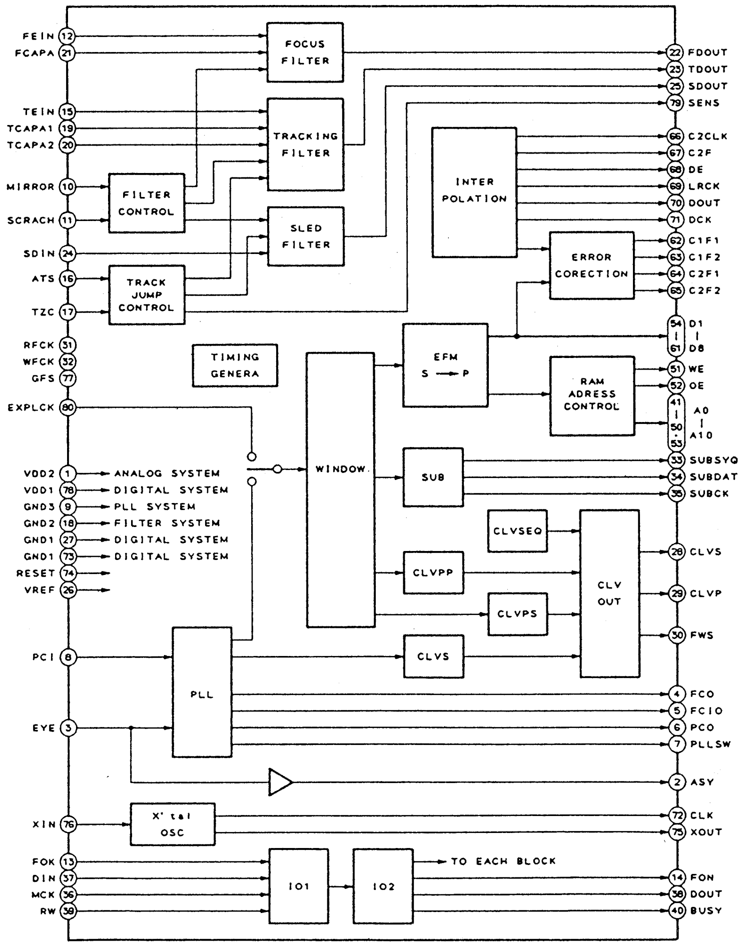
1
2
3
4
CONT
Vcc
8 OUT B1
7 OUT B2
6 Vcc
5 POW GND

IC501 BA6373AK



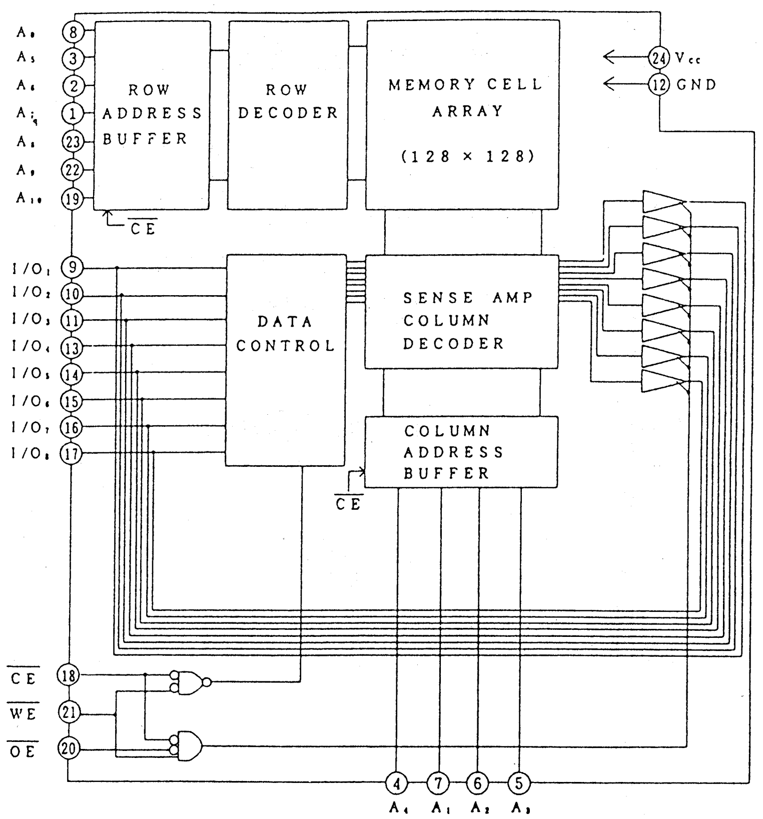
RF-
RFO
RFI
VCC
PLH
BLH
DETGND
ASY
DET BLOCK
PS PL
BL BS
HOLD BLOCK
LOOP ON
RAMP OSC
SCRATCH CONTROL
MUTE
x2
-0.3V
0.2V
1.17V
EFM
MIRR
DEFECT
FE
FOK
FON
TE
SC
A
B
D
C
FEB
VB
FE
EI
E
F
AGND
DGND
FI
LD
PD
R/H
43k
0.7p
60k
10k
20k
38k
39k
44.7k
27.2p
160k
560k
8.6p
56k
180k
1k
18k

IC502 BU9310BKS



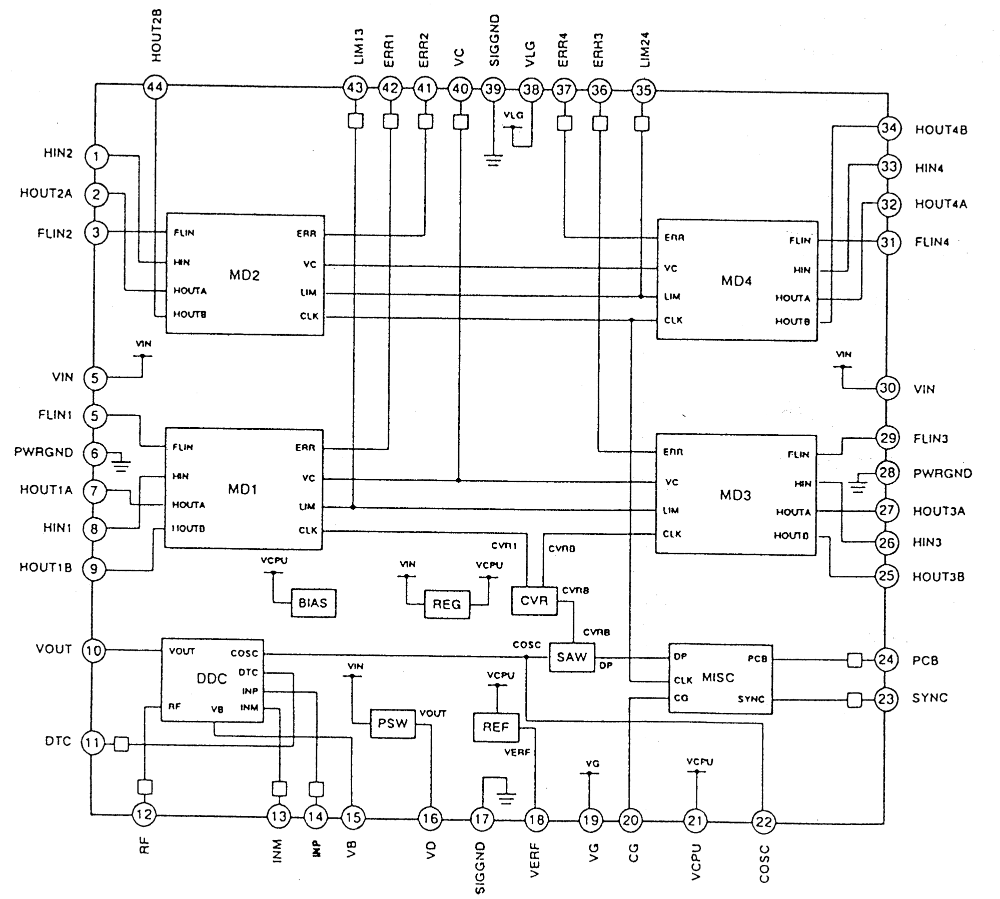
FEIN
FCAPA
TEIN
TCAPA1
TCAPA2
MIRROR
SCRACH
SDIN
ATS
TZC
RFCK
WFCK
GFS
EXPLCK
VDD2
VDD1
GND3
GND2
GND1
GND1
RESET
VREF
PCI
EYE
XIN
FOK
DIN
MCK
RW
FOCUS FILTER
TRACKING FILTER
SLED FILTER
FILTER CONTROL
TRACK JUMP CONTROL
TIMING GENERA
INTER POLATION
ERROR CORECTION
EFM S → P
RAM ADRESS CONTROL
WINDOW
SUB
CLVSEQ
CLVPP
CLVPS
CLV OUT
CLVS
PLL
X'tal OSC
IO1
IO2
TO EACH BLOCK
ANALOG SYSTEM
DIGITAL SYSTEM
PLL SYSTEM
FILTER SYSTEM
DIGITAL SYSTEM
DIGITAL SYSTEM
FDOUT
TDOUT
SDOUT
SENS
C2CLK
C2F
DE
LRCK
DOUT
DCK
C1F1
C1F2
C2F1
C2F2
D1
D8
WE
OE
A0
A10
SUBSYQ
SUBDATA
SUBCK
CLVS
CLVP
FWS
FCO
FCIO
PCO
PLLSW
ASY
CLK
XOUT
FON
DOUT
BUSY

IC506 LH5116ZE



ROW ADDRESS BUFFER
ROW DECODER
MEMORY CELL ARRAY
(128 × 128)
DATA CONTROL
SENSE AMP COLUMN DECODER
COLUMN ADDRESS BUFFER
CE
Vcc
GND
I/O
CE
WE
OE

IC507 SC111282LFU



HOUT2B
LIM13
ERR1
ERR2
VC
SIGGND
VLG
ERR4
ERR3
LIM24
HIN2
HOUT2A
FLIN2
VIN
FLIN1
PWRGND
HOUT1A
HIN1
HOUT1B
VOUT
DTC
HOUT4B
HIN4
HOUT4A
FLIN4
VIN
FLIN3
PWRGND
HOUT3A
HIN3
HOUT3B
PCB
SYNC
MD2
MD4
MD1
MD3
BIAS
REG
CVR
SAW
DDC
MISC
PSW
REF
RF
INM
INP
VB
VD
SIGGND
VERF
VG
CG
VCPU
COSC

2-4-4. IC PIN FUNCTION
MAIN BOARD IC801 MSM65344-017GS-V1K

Pin No.	Pin Name	I/O	Description
1	COM3	O	LCD drive output. Connected to LCD COM3.
2 – 14	SEG0 – 12	O	LCD drive output. Connected to LCD S0 – S12.
15 – 17	SEG13 – 15	—	Not used.
18	AGND	—	For A/D converter. Analog GND.
19	KEY	I	A/D input of body key. PLAY (0.0), STOP (0.1VDD), FF (0.2VDD), FR (0.3VDD), PLAY MODE (0.4VDD), RPT/ENT (0.5VDD)
20	RMKEY	I	Not used.
21	VCCMNT	O	Voltage monitor of main DC-DC converter output.
22	BATMNT	I	Battery (DM-10/AM-3) voltage monitor.
23	CHGMNT	I	Charging voltage monitor in DM-10 rapid charging.
24	NC	I	Input terminal.
25	AVDD	—	Analog VDD.
26	D-MUTE	O	Not used.
27	A-MUTE	O	"H" analog mute ON.
28	CHG	O	"L" rapid charge ON.
29	EMPSIS	O	"H" EMPHASIS off.
30	LIGHT	O	Not used.
31	PCON	O	"L" power control ON. To SC111282LFU.
32	XDM1	I	"L" DM-10 IN. Charging battery detecting terminal.
33	DCIN	I	"L" DC IN. DC-IN detecting terminal.
34	TEST	I	"L" test (service) mode.
35	HOLD	I	"L" HOLD ON. To HOLD switch.
36	RSM	I	"L" RESUME ON. To RESUME switch.
37	OPEN	I	"L" CLOSE. To OPEN switch.
38	LS	I	"L" pick up clockwise circuit.
39	XSOE	O	Not used.
40	SCK	O	Not used.
41	SDTI	I	Not used.
42	DACLAT	O	Not used.
43	XWRE	O	Not used.
44	CLV-MUTE	O	CLV reverse prevention output. "L" CLV STOP.
45	RW	O	DSP serial data reading/writing switching singnal. To BU9310BKS.
46	SCLK	O	DSP serial clock. To BU9310BKS.
47	SUBQ	I	SUB-Q serial data input. To BU9310BKS.
48	DATA	O	DSP serial order output. To BU9310BKS.
49	RMC	I	SIRCS signal in.
50	VCCADJ	—	Not used.
51	—	—	Not used.
52	VDD	—	Micro computer power supply. VDD=3.2V
53	BEEP	O	Not used.
54	DTSL	O	Not used.
55	XQOK	O	Not used.

Pin No.	Pin Name	I/O	Description
56	SCOR	I	SCOR interrupting signal. From BU9310BKS.
57	XRDE	O	Not used.
58	WDSL	O	Not used.
59	FOKI	I	For FOCUS OK signal detection.
60	WP	I	Sleep mode canceling signal input terminal. Cancelled at trailing edge.
61	$\overline{\text{OSCI}}$		System clock generating device connecting terminal.
62	OSC0		
63	GND	—	GND.
64	$\overline{\text{RESET}}$	I	Micro computer reset terminal. "L" micro computer reset.
65	—	—	GND.
66	—	—	Not used.
67	CHM0	O	Not used.
68	CHM1	O	Not used.
69	XRST	O	System reset terminal "L" system IC reset.
70	C2MN	O	Not used.
71	RMDATA	O	Not used.
72	$\overline{\text{BUSY}}$	I	"L" track jumping. To BU9310BKS.
73	VLC	O	LCD driving bias output.
74	VLC		
75	VLC		
76	C1		LCD driving bias generating condenser connecting terminal.
77	C2		
78	COM0	O	LCD driving output. Connected to LCD COM0 − 2.
79	COM1		
80	COM2		

2-5. EXPLODED VIEWS

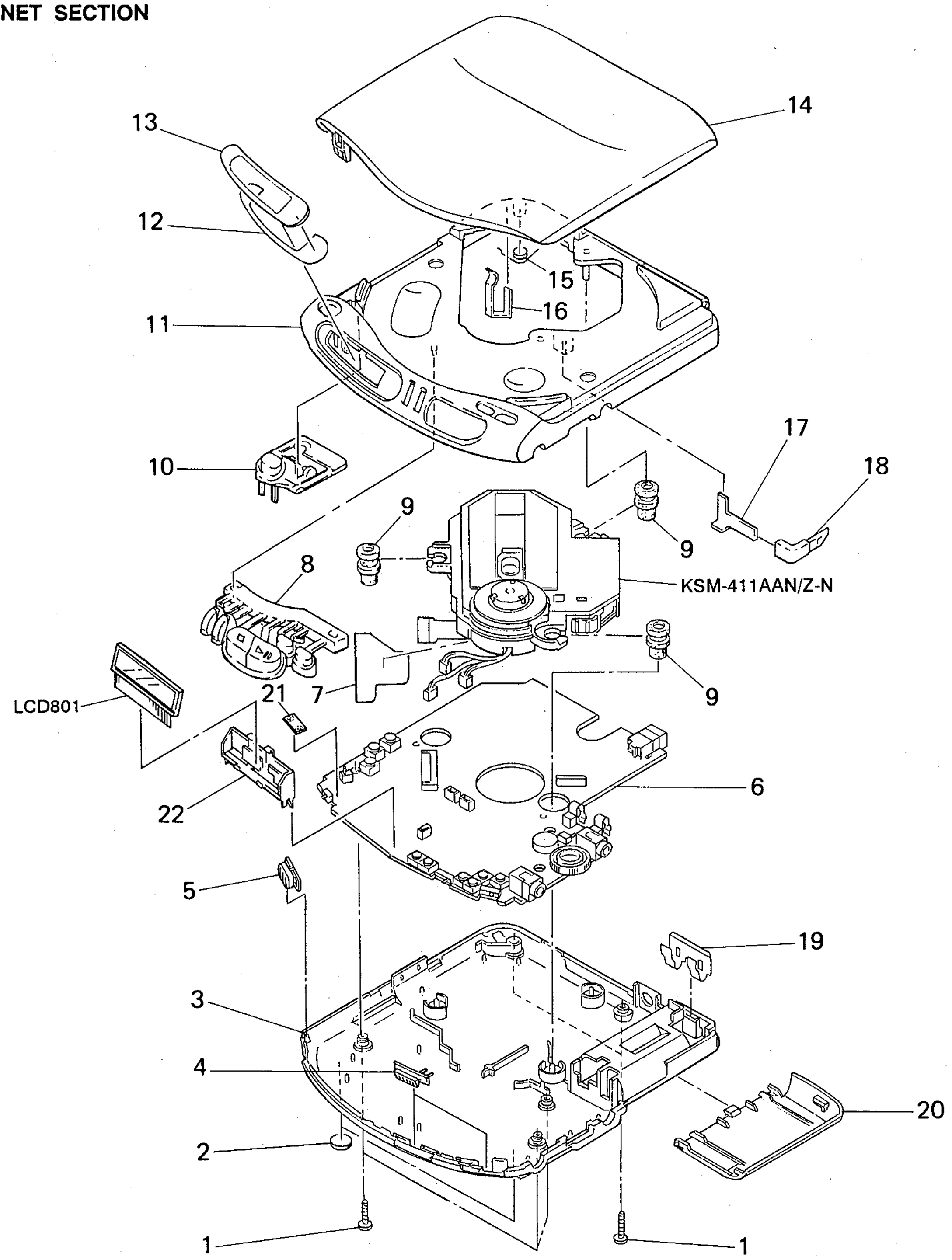
NOTE:

- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Color Indication of Appearance Parts
  Example:
  KNOB, BALANCE (WHITE) . . . (RED)
  ↑ Parts Color ↑ Cabinet's Color
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Abbreviations
  130 : D-130
  131 : D-131

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

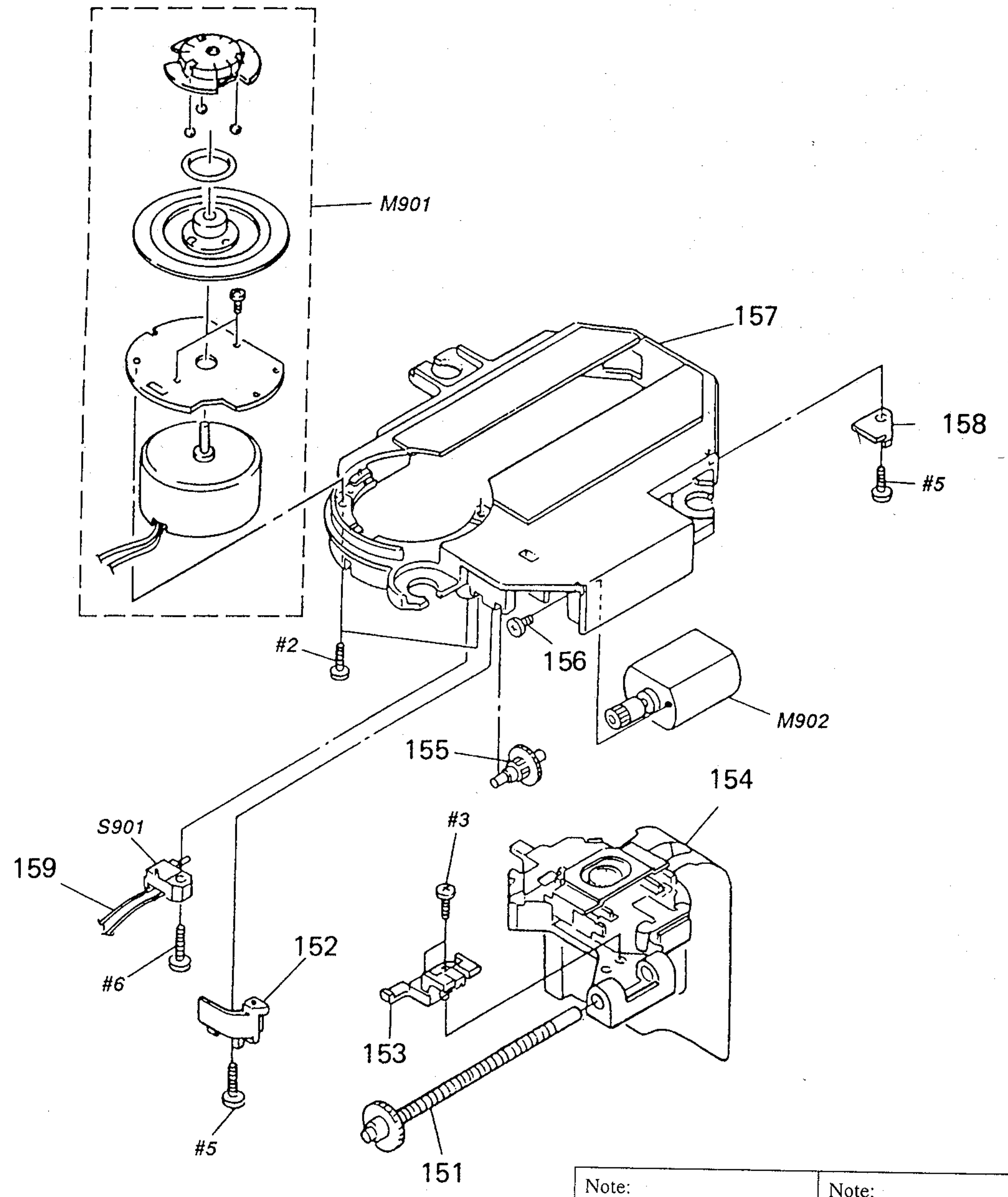
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le neméro spécifié.

(1) CABINET SECTION



Ref. No.	Part No.	Description	Remark
1	4-958-597-01	SCREW	
2	4-962-025-01	FOOT, RUBBER	
3	4-966-034-01	CABINET (REAR) (BLACK)... (BLACK, GREEN, BLUE) (131)	
3	4-966-034-11	CABINET (REAR) (GREY)... (RED) (131)	
3	4-969-100-41	CABINET (REAR) (BLACK)... (BLACk) (130)	
4	4-965-552-01	KNOB (A-B) (BLACK)... (BLACK, GREEN, BLUE)	
4	4-965-552-11	KNOB (A-B) (GREY)... (RED) (131)	
5	4-965-553-01	KNOB (HOLD) (BLACK)... (BLACK, GREEN, BLUE)	
5	4-965-553-11	KNOB (HOLD) (GREY)... (RED) (131)	
6	A-3276-608-A	MAIN BOARD, COMPLETE (TYPE B)	
6	A-3276-614-A	MAIN BOARD, COMPLETE (TYPE A)	
7	4-956-818-01	RETAINER, FLEXIBLE	
8	4-965-545-01	BUTTON (OPE) (BLACK)... (BLACK, GREEN, BLUE)	
8	4-965-545-11	BUTTON (OPE) (GREY)... (RED) (131)	
9	4-947-759-01	INSULATOR (I)	
10	4-965-546-01	BUTTON (OPEN) (BLACK)... (BLACK, GREEN, BLUE)	
10	4-965-546-11	BUTTON (OPEN) (GREY)... (RED) (131)	
11	4-965-544-01	CABINET (FRONT) (BLACK)... (BLACK, GREEN, BLUE)	
11	4-965-544-11	CABINET (FRONT) (GREY)... (RED) (131)	
12	4-965-559-01	SHEET (LCD), ADHESIVE	
13	4-965-557-01	WINDOW (LCD)	
14	4-965-556-01	LID, UPPER (BLACK) (131)	
14	4-965-556-11	LID, UPPER (RED) (131)	
14	4-965-556-21	LID, UPPER (GREEN) (131)	
14	4-965-556-31	LID, UPPER (BLUE) (131)	
14	4-969-101-41	LID, UPPER (BLACK) (130)	
15	4-966-430-01	SPRING, TORSION	
16	4-965-549-01	SPRING (U. LID)	
17	4-964-897-01	SPRING (SEPARATOR)	
18	4-965-547-01	SEPARATOR	
19	4-944-349-11	TERMINAL BOARD (RELAY), BATTERY	
20	4-965-558-01	LID, BATTERY CASE (BLACK)... (BLACK, GREEN, BLUE)	
20	4-965-558-11	LID, BATTERY CASE (GREY)... (RED) (131)	
21	4-966-894-01	SPACER	
22	4-965-550-01	HOLDER (LCD)	
LCD801	1-810-521-11	DISPLAY PANEL, LIQUID CRYSTAL	

(2) OPTICAL PICK-UP BLOCK SECTION (KSM-411AAN/Z-N)



Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le neméro spécifié.

Ref. No.	Part No.	Description	Remark
151	X-2625-483-1	SCREW ASSY, SLED	
152	2-625-421-02	SPRING, SLED	
153	2-625-414-02	RACK	
⚠154	8-848-364-11	DEVICE, OPTICAL (KSS-411A/Z-RP)	
155	2-625-410-01	GEAR (B)	
156	3-732-988-01	SCREW (M2X2.5)	

Ref. No.	Part No.	Description	Remark
157	2-625-415-02	CHASSIS, MD	
158	2-625-411-01	RETAINER, SHAFT	
159	1-948-418-21	HARNESS	
M901	X-2625-485-1	MOTOR ASSY, T.T. (SPINDLE)	
M902	X-2626-171-2	MOTOR ASSY, SLED	
S901	1-570-771-11	SWITCH (LIMIT)	

2-6. ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL:Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F:nonflammable
- Abbreviations
  G : German model FR: French model 130: D-130 131: D-131
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u:μ, for example:
  uA..: μA.. uPA..: μPA..
  uPB..: μPB.. uPC..: μPC.. uPD..: μPD..
- CAPACITORS
  uF: μF
- COILS
  uH: μH

When indicating parts by reference number, please include the board.

The components identified by mark ⚠ or dotted line with mark. ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

ALFL BOARD
(Included in MAIN BORD, COMPLETE)
****

Ref. No.	Part No.	Description	Remark
		< CAPACITOR >	
C573	1-162-977-11	CERAMIC CHIP	0.0018uF 10% 50V
C574	1-104-852-11	TANTAL. CHIP	22uF 20% 10V
C575	1-104-852-11	TANTAL. CHIP	22uF 20% 10V
		< COIL >	
L510	1-414-402-11	INDUCTOR	47uH
		< TRANSISTOR >	
Q570	8-729-904-86	TRANSISTOR	2SB1197K-Q
Q571	8-729-905-61	TRANSISTOR	DTC124EU
		< RESISTOR >	
R574	1-216-833-11	METAL CHIP	10K 5% 1/16W
R575	1-216-828-11	METAL CHIP	3.9K 5% 1/16W
R576	1-216-861-11	METAL CHIP	2.2M 5% 1/16W
R577	1-216-001-00	METAL CHIP	10 5% 1/10W
R579	1-216-833-11	METAL CHIP	10K 5% 1/16W
R580	1-216-825-11	METAL CHIP	2.2K 5% 1/16W

****

DFCT BOARD
(Included in MAIN BORD, COMPLETE)
****

Ref. No.	Part No.	Description	Remark
		< TRANSISTOR >	
Q507	8-729-901-00	TRANSISTOR	DTC124EK

****

FILTER BOARD
(Included in MAIN BORD, COMPLETE)
****

Ref. No.	Part No.	Description	Remark
		< CAPACITOR >	
C576	1-163-117-00	CERAMIC CHIP	100PF 5% 50V
		< RESISTOR >	
R581	1-216-841-11	METAL CHIP	47K 5% 1/16W

****

A-3276-608-A MAIN BORAD, COMPLETE (TYPE B)
****

A-3276-614-A MAIN BOARD, COMPLETE (TYPE A)
****

4-969-086-01 TERMINAL BOARD, BATTERY

Ref. No.	Part No.	Description	Remark
		< CAPACITOR >	
C102	1-162-968-11	CERAMIC CHIP	0.0047uF 10% 50V
C106	1-126-163-11	ELECT	4.7uF 20% 50V
C107	1-135-091-00	TANTAL. CHIP	1uF 20% 16V
C109	1-164-222-11	CERAMIC CHIP	0.22uF 25V
C202	1-162-968-11	CERAMIC CHIP	0.0047uF 10% 50V
C206	1-126-163-11	ELECT	4.7uF 20% 50V
C207	1-135-091-00	TANTAL. CHIP	1uF 20% 16V
C209	1-164-222-11	CERAMIC CHIP	0.22uF 25V
C301	1-162-944-11	CERAMIC CHIP	18PF 5% 50V
C302	1-162-944-11	CERAMIC CHIP	18PF 5% 50V
C305	1-164-234-11	CERAMIC CHIP	1uF 10V
C306	1-163-038-00	CERAMIC CHIP	0.1uF 25V
C307	1-163-038-00	CERAMIC CHIP	0.1uF 25V
C308	1-124-434-00	ELECT	220uF 20% 4V
C309	1-163-038-00	CERAMIC CHIP	0.1uF 25V
C311	1-164-234-11	CERAMIC CHIP	1uF 10V
C312	1-164-234-11	CERAMIC CHIP	1uF 10V
C313	1-162-953-11	CERAMIC CHIP	100PF 5% 50V
C314	1-135-201-11	TANTALUM CHIP	10uF 20% 4V
C315	1-164-234-11	CERAMIC CHIP	1uF 10V
C316	1-104-851-11	TANTAL. CHIP	10uF 20% 10V
C317	1-126-157-11	ELECT	10uF 20% 16V
C318	1-124-778-00	ELECT CHIP	22uF 20% 6.3V
C319	1-126-153-11	ELECT	22uF 20% 6.3V
C320	1-164-234-11	CERAMIC CHIP	1uF 10V
C321	1-164-234-11	CERAMIC CHIP	1uF 10V
C322	1-163-036-00	CERAMIC CHIP	0.068uF 50V

Ref. No.	Part No.	Description			Remark
C323	1-163-036-00	CERAMIC CHIP	0.068uF		50V
C324	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C334	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C338	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C339	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C340	1-164-234-11	CERAMIC CHIP	1uF		10V
C341	1-164-234-11	CERAMIC CHIP	1uF		10V
C342	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C343	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C344	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C401	1-127-561-11	ELECT(SOLID)	33uF	20%	10V
C402	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C403	1-164-492-11	CERAMIC CHIP	0.15uF	10%	16V
C404	1-127-561-11	ELECT(SOLID)	33uF	20%	10V
C405	1-162-949-11	CERAMIC CHIP	47PF	5%	50V
C406	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C407	1-128-241-11	ELECT	220uF	20%	10V
C408	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C411	1-164-234-11	CERAMIC CHIP	1uF		10V
C412	1-104-851-11	TANTAL. CHIP	10uF	20%	10V
C413	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C414	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C415	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C416	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C501	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C502	1-127-561-11	ELECT(SOLID)	33uF	20%	10V
C503	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C504	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C505	1-126-154-11	ELECT	47uF	20%	6.3V
C506	1-162-946-11	CERAMIC CHIP	27PF	5%	50V
C507	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C508	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C509	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C510	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C511	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C513	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V
C514	1-124-584-00	ELECT	100uF	20%	10V
C515	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C516	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C517	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C518	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C519	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C520	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C521	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C522	1-164-490-11	CERAMIC CHIP	0.068uF		16V
C523	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C524	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C525	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V

Ref. No.	Part No.	Description			Remark
C526	1-135-318-11	TANTAL. CHIP	33uF	20%	4V
C528	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C529	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C530	1-164-344-11	CERAMIC CHIP	0.068uF	10%	25V
C531	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C533	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C534	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C537	1-104-851-11	TANTAL. CHIP	10uF	20%	10V
C538	1-128-038-11	ELECT CHIP	1.5uF		35V
C539	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C540	1-104-852-11	TANTAL. CHIP	22uF	20%	10V
C541	1-164-234-11	CERAMIC CHIP	1uF		10V
C542	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C543	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C544	1-164-234-11	CERAMIC CHIP	1uF		10V
C545	1-164-473-11	CERAMIC CHIP	820PF	5%	50V
C546	1-164-234-11	CERAMIC CHIP	1uF		10V
C547	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C548	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C549	1-164-234-11	CERAMIC CHIP	1uF		10V
C550	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C551	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C552	1-104-851-11	TANTAL. CHIP	10uF	20%	10V
C553	1-128-038-11	ELECT CHIP	1.5uF		35V
C554	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C557	1-162-947-11	CERAMIC CHIP	33PF	5%	50V
C559	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V
C564	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C565	1-162-913-11	CERAMIC CHIP	8PF	0.5PF	50V
C566	1-162-913-11	CERAMIC CHIP	8PF	0.5PF	50V
C568	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C569	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C570	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V (TYPE B)
C572	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V (TYPE B)
C590	1-164-234-11	CERAMIC CHIP	1uF		10V
C801	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C802	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C803	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C804	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C805	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C806	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C807	1-164-234-11	CERAMIC CHIP	1uF		10V
C808	1-164-234-11	CERAMIC CHIP	1uF		10V
C809	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C810	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C811	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C812	1-162-294-31	CERAMIC CHIP	0.001uF	10%	50V

MAIN

Ref. No.	Part No.	Description	Remark
C813	1-162-294-31	CERAMIC CHIP 0.001uF 10% 50V	
C814	1-162-294-31	CERAMIC CHIP 0.001uF 10% 50V	

< CONNECTOR >

Ref. No.	Part No.	Description	Remark
CN501	1-566-531-11	CONNECTOR, FPC (ZIF) 15P	
* CN502	1-695-320-51	PIN, CONNECTOR (1.5MM) (SMD) 2P	
* CN503	1-695-320-31	PIN, CONNECTOR (1.5MM) (SMD) 2P	
* CN504	1-695-320-21	PIN, CONNECTOR (1.5MM) (SMD) 2P	

< DIODE >

Ref. No.	Part No.	Description	Remark
D101	8-719-422-46	DIODE MA8056	
D201	8-719-422-46	DIODE MA8056	
D301	8-719-941-86	DIODE DAN202U	
D303	8-719-422-46	DIODE MA8056	
D307	8-719-941-86	DIODE DAN202U	
D309	8-719-049-11	DIODE 1SS377-TE85L	
D401	8-719-049-09	DIODE 1SS367-T3SONY	
D402	8-719-048-98	DIODE RB160L-40TE25	
D403	8-719-048-98	DIODE RB160L-40TE25	
D404	8-719-048-98	DIODE RB160L-40TE25	
D405	8-719-049-09	DIODE 1SS367-T3SONY	
D501	8-719-049-11	DIODE 1SS377-TE85L	
D502	8-719-049-09	DIODE 1SS367-T3SONY	
D503	8-719-049-10	DIODE 1SS374-TE85L	
D506	8-719-977-34	DIODE DTZ12	
D507	8-719-049-09	DIODE 1SS367-T3SONY	
D508	8-719-422-46	DIODE MA8056	
D801	8-719-941-86	DIODE DAN202U	
D802	8-719-941-09	DIODE DAP202U	
D803	8-719-941-86	DIODE DAN202U	

< FERRITE BEAD >

Ref. No.	Part No.	Description	Remark
FB101	1-414-233-21	INDUCTOR, FERRITE BEAD	
FB201	1-414-233-21	INDUCTOR, FERRITE BEAD	
FB302	1-414-235-11	INDUCTOR, FERRITE BEAD	
FB304	1-414-233-21	INDUCTOR, FERRITE BEAD	
FB305	1-414-233-21	INDUCTOR, FERRITE BEAD	
FB501	1-414-233-21	INDUCTOR, FERRITE BEAD	

< IC >

Ref. No.	Part No.	Description	Remark
IC301	8-759-263-31	IC TC9293FN-EL	
IC302	8-759-179-65	IC BA3124F-T1	
IC303	8-759-285-22	IC BA3574AFS-T1	
IC401	8-759-176-73	IC RS5RJ32271-T1	
IC402	8-759-710-55	IC NJM2100M	
IC501	8-759-293-60	IC BA6373AK	
IC502	8-759-293-61	IC BU9310BKS	
IC503	8-759-710-55	IC NJM2100M	
IC504	8-759-031-84	IC SC7S04F	
IC505	8-759-710-55	IC NJM2100M (TYPE B)	
IC506	8-759-264-81	IC LH51162E	
IC507	8-759-263-14	IC SC111281LFU	
IC801	8-759-327-76	IC MSM65344-017GS-V1K	

< JACK >

Ref. No.	Part No.	Description	Remark
J301	1-565-287-41	JACK (LINE OUT)	
J302	1-565-287-11	JACK (PHONES)	
J401	1-691-099-51	JACK, DC (POLARITY UNIFIED TYPE) (DC IN 4.5V)	

< CONDUCTOR >

Ref. No.	Part No.	Description	Remark
JR301	1-216-864-11	CONDUCTOR CHIP 0 5% 1/16W	
JR501	1-216-864-11	CONDUCTOR CHIP 0 5% 1/16W	
JR502	1-216-864-11	CONDUCTOR CHIP 0 5% 1/16W	
JR503	1-216-864-11	CONDUCTOR CHIP 0 5% 1/16W	
JR504	1-216-864-11	CONDUCTOR CHIP 0 5% 1/16W	
JR505	1-216-864-11	CONDUCTOR CHIP 0 5% 1/16W	
JR506	1-216-864-11	CONDUCTOR CHIP 0 5% 1/16W	
JR514	1-216-864-11	CONDUCTOR CHIP 0 5% 1/16W	
JR570	1-216-864-11	CONDUCTOR CHIP 0 5% 1/16W	(TYPE A)
JR573	1-216-864-11	CONDUCTOR CHIP 0 5% 1/16W	(TYPE B)
JR574	1-216-864-11	CONDUCTOR CHIP 0 5% 1/16W	(TYPE B)
JR575	1-216-864-11	CONDUCTOR CHIP 0 5% 1/16W	

< COIL >

Ref. No.	Part No.	Description	Remark
L102	1-412-002-31	INDUCTOR CHIP 4.7uH	
L202	1-412-002-31	INDUCTOR CHIP 4.7uH	
L301	1-412-002-31	INDUCTOR CHIP 4.7uH	
L304	1-412-002-31	INDUCTOR CHIP 4.7uH	
L305	1-412-002-31	INDUCTOR CHIP 4.7uH	
L306	1-412-002-31	INDUCTOR CHIP 4.7uH	
L401	1-412-622-51	INDUCTOR 10uH	
L402	1-412-630-51	INDUCTOR 47uH	
L502	1-414-398-11	INDUCTOR 10uH	
L503	1-414-398-11	INDUCTOR 10uH	
L504	1-414-398-11	INDUCTOR 10uH	
L505	1-414-402-11	INDUCTOR 47uH	
L506	1-414-402-11	INDUCTOR 47uH	
L507	1-414-402-11	INDUCTOR 47uH	
L508	1-414-402-11	INDUCTOR 47uH	
L509	1-414-398-11	INDUCTOR 10uH	

< LIQUID CRYSTAL >

Ref. No.	Part No.	Description	Remark
LCD801	1-810-521-11	DISPLAY PANEL, LIQUID CRYSTAL	

Ref. No.	Part No.	Description	Remark
		< TRANSISTOR >	
Q301	8-729-230-60	TRANSISTOR 2SA1586-YG	
Q307	8-729-402-13	TRANSISTOR XN1501	
Q308	8-729-101-07	TRANSISTOR 2SB798-DL	
Q309	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q401	8-729-014-18	TRANSISTOR RN2303-TE85L	
Q402	8-729-028-60	TRANSISTOR 2SD1950VKVLVM-T1	
Q403	8-729-923-36	TRANSISTOR 2SD1963-Q.R	
Q408	8-729-922-34	TRANSISTOR 2SD1758F5-QR	
Q409	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q410	8-729-403-02	TRANSISTOR XN4212	
Q411	8-729-014-18	TRANSISTOR RN2303-TE85L	
Q412	8-729-920-56	TRANSISTOR FMG1	
Q413	8-729-014-18	TRANSISTOR RN2303-TE85L	
Q501	8-729-904-86	TRANSISTOR 2SB1197K-Q	
Q503	8-729-014-34	TRANSISTOR RN2311-TE85L	
Q804	8-729-402-32	TRANSISTOR 2SD1819A-R	
		< RESISTOR >	
R109	1-216-810-11	METAL CHIP 120 5% 1/16W	
R110	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R111	1-216-813-11	METAL CHIP 220 5% 1/16W	
R112	1-216-809-11	METAL CHIP 100 5% 1/16W	
R113	1-216-835-11	METAL CHIP 15K 5% 1/16W	
R114	1-216-789-11	METAL CHIP 2.2 5% 1/16W	
R209	1-216-810-11	METAL CHIP 120 5% 1/16W	
R210	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R211	1-216-813-11	METAL CHIP 220 5% 1/16W	
R212	1-216-809-11	METAL CHIP 100 5% 1/16W	
R213	1-216-835-11	METAL CHIP 15K 5% 1/16W	
R214	1-216-789-11	METAL CHIP 2.2 5% 1/16W	
R302	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R303	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R304	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R305	1-216-013-00	METAL CHIP 33 5% 1/10W	
R306	1-216-809-11	METAL CHIP 100 5% 1/16W	
R307	1-216-797-11	METAL CHIP 10 5% 1/16W	
R308	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R309	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R310	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R317	1-216-817-11	METAL CHIP 470 5% 1/16W	
R318	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R319	1-216-835-11	METAL CHIP 15K 5% 1/16W	
R320	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R401	1-216-844-11	METAL CHIP 82K 5% 1/16W	
R402	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R403	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R404	1-216-844-11	METAL CHIP 82K 5% 1/16W	
R405	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R406	1-216-805-11	METAL CHIP 47 5% 1/16W	
R407	1-216-809-11	METAL CHIP 100 5% 1/16W	
R410	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R411	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R412	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R413	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R414	1-216-854-11	METAL CHIP 560K 5% 1/16W	
R415	1-217-671-11	METAL CHIP 1 5% 1/10W	
R416	1-217-671-11	METAL CHIP 1 5% 1/10W	
R417	1-218-724-11	METAL CHIP 22K 0.50% 1/16W	
R418	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R419	1-218-734-11	METAL CHIP 56K 0.50% 1/16W	
R420	1-218-724-11	METAL CHIP 22K 0.50% 1/16W	
R421	1-218-717-11	METAL CHIP 11K 0.50% 1/16W	
R422	1-218-870-11	METAL CHIP 9.1K 0.50% 1/16W	
R423	1-218-720-11	METAL CHIP 15K 0.50% 1/16W	
R424	1-216-019-00	METAL CHIP 56 5% 1/10W	
R501	1-216-851-11	METAL CHIP 330K 5% 1/16W	
R502	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R503	1-216-864-11	METAL CHIP 0 5% 1/16W	
R504	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R505	1-216-809-11	METAL CHIP 100 5% 1/16W	
R506	1-217-671-11	METAL CHIP 1 5% 1/10W	
R507	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R508	1-218-714-11	METAL CHIP 8.2K 0.50% 1/16W	
R510	1-218-870-11	METAL CHIP 9.1K 0.50% 1/16W	
R511	1-218-867-11	METAL CHIP 6.8K 0.50% 1/16W	
R512	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R513	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	
R514	1-216-842-11	METAL CHIP 56K 5% 1/16W	
R515	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R516	1-218-714-11	METAL CHIP 8.2K 0.50% 1/16W	
R517	1-218-724-11	METAL CHIP 22K 0.50% 1/16W	
R518	1-218-886-11	METAL CHIP 43K 0.50% 1/16W	
R519	1-216-849-11	METAL CHIP 220K 5% 1/16W	
R520	1-216-844-11	METAL CHIP 82K 5% 1/16W	
R521	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R522	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R523	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R524	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R525	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R526	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R527	1-216-855-11	METAL CHIP 680K 5% 1/16W	
R528	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R529	1-216-849-11	METAL CHIP 220K 5% 1/16W	
R530	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R531	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	

MAIN

Ref. No.	Part No.	Description	Remark
R532	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R534	1-216-847-11	METAL CHIP 150K 5% 1/16W	
R535	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R536	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R537	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R538	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R539	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R542	1-216-830-11	METAL CHIP 5.6K 5% 1/16W	
R543	1-216-830-11	METAL CHIP 5.6K 5% 1/16W	
R544	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R545	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R546	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R548	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R549	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R551	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R552	1-216-849-11	METAL CHIP 220K 5% 1/16W	
R554	1-216-849-11	METAL CHIP 220K 5% 1/16W	
R557	1-218-705-11	METAL CHIP 3.6K 0.50% 1/16W	
R559	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R570	1-216-833-11	METAL CHIP 10K 5% 1/16W	(TYPE B)
R571	1-216-838-11	METAL CHIP 27K 5% 1/16W	(TYPE B)
R572	1-216-838-11	METAL CHIP 27K 5% 1/16W	(TYPE B)
R573	1-216-833-11	METAL CHIP 10K 5% 1/16W	(TYPE B)
R592	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R593	1-216-810-11	METAL CHIP 120 5% 1/16W	
R594	1-218-851-11	METAL CHIP 1.5K 0.50% 1/16W	
R595	1-218-730-11	METAL CHIP 39K 0.50% 1/16W	
R802	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R803	1-218-345-11	METAL GLAZE 9.1K 5% 1/16W	
R804	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R805	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R806	1-216-820-11	METAL CHIP 820 5% 1/16W	
R807	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	
R808	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R809	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R810	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R812	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R814	1-218-716-11	METAL CHIP 10K 0.50% 1/16W	
R816	1-216-857-11	METAL CHIP 1M 5% 1/16W	

< VARIABLE RESISTOR >

Ref. No.	Part No.	Description	Remark
RV301	1-223-382-11	RES, VAR, CARBON 10K/10K (VOLUME)	
RV401	1-223-578-11	RES, ADJ, METAL GLAZE 22K	
RV501	1-223-612-11	RES, ADJ, METAL GLAZE 47K	
RV502	1-223-695-11	RES, ADJ, METAL GLAZE 10K	
RV503	1-223-578-11	RES, ADJ, METAL GLAZE 22K	
RV504	1-223-578-11	RES, ADJ, METAL GLAZE 22K	
RV505	1-223-612-11	RES, ADJ, METAL GLAZE 47K	

< SWITCH >

Ref. No.	Part No.	Description	Remark
S301	1-692-605-11	SWITCH, SLIDE (BASS BOOST)	
S302	1-692-605-11	SWITCH, SLIDE (AVLS SELECT)	
S801	1-572-922-11	SWITCH, SLIDE (HOLD)	
S802	1-572-198-11	SWITCH, KEYBOARD (▶▶II)	
S803	1-572-198-11	SWITCH, KEYBOARD (■)	
S804	1-572-198-11	SWITCH, KEYBOARD (▶▶|)	
S805	1-572-198-11	SWITCH, KEYBOARD (|◀◀)	
S806	1-572-198-11	SWITCH, KEYBOARD (REPEAT/ENTER)	
S807	1-572-198-11	SWITCH, KEYBOARD (PLAY MODE)	
S809	1-692-532-21	SWITCH, PUSH (1 KEY) (R. BATT)	
S810	1-570-953-11	SWITCH, PUSH (1 KEY) (OPEN)	

< TRANSFORMER >

Ref. No.	Part No.	Description	Remark
T401	1-423-636-11	TRANSFORMER, DC-DC CONVERTER	

< VIBRATOR >

Ref. No.	Part No.	Description	Remark
X301	1-579-345-11	VIBRATOR, CERAMIC (16.9MHz)	
X801	1-579-956-11	VIBRATOR, CERAMIC (3.58MHz)	

****

MISCELLANEOUS
****

Ref. No.	Part No.	Description	Remark
⚠154	8-848-364-11	DEVICE, OPTICAL (KSS-411A/Z-RP)	
159	1-948-418-21	HARNESS	
M901	X-2625-485-1	MOTOR ASSY, T.T. (SPINDLE)	
M902	X-2626-171-2	MOTOR ASSY, (SLED)	
S901	1-570-771-11	SWITCH (LIMIT)	

****

ACCESSORIES & PACKING MATERIALS
****

Ref. No.	Part No.	Description	Remark
⚠	1-467-008-11	ADAPTOR, AC (AC-E455) (131:AEP, G, FR)	
⚠	1-467-009-11	ADAPTOR, AC (AC-E455) (131:US)	
⚠	1-467-013-11	ADAPTOR, AC (AC-E455) (131:UK)	
	1-559-906-32	CORD, CONNECTION	
	1-751-419-11	CORD, CONNECTION	
	1-751-419-11	CORD, CONNECTION	
	3-701-626-01	BAG, POLYETHYLENE	
	3-759-463-13	MANUAL, INSTRUCTION (SPANISH) (130:AEP, UK/131:AEP)	
	3-759-463-23	MANUAL, INSTRUCTION (ENGLISH) (130/131:US, AEP, UK)	
	3-759-463-33	MANUAL, INSTRUCTION (FRENCH) (130/131:AEP, FR)	
	3-759-463-43	MANUAL, INSTRUCTION (DUTCH) (130:AEP/131:AEP)	

The components identified by mark ⚠ or dotted line with mark. ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
	3-759-463-53	MANUAL, INSTRUCTION (SWEDISH)(130:AEP/131:AEP)	
	3-759-463-63	MANUAL, INSTRUCTION (PORTUGUESE)(130:AEP/131:AEP)	
	3-759-463-73	MANUAL, INSTRUCTION (GERMAN)(130:AEP,UK/131:AEP,G)	
	3-759-463-83	MANUAL, INSTRUCTION (ITALIAN)(130:AEP,UK/131:AEP)	
*	4-969-646-01	INDIVIDUAL CARTON (131:AEP,G,UK,FR)	
*	4-969-649-01	INDIVIDUAL CARTON (131:US)	
*	4-969-651-01	CUSHION (131:US)	
*	4-969-652-01	INDIVIDUAL CARTON (130)	
	8-953-011-90	HEADPHONE MDR-014B//0 SET (131:US)	
	8-953-538-91	HEADPHONE MDR-E741//K1 SET (130/131:AEP,G,UK,FR)	

****

****

HARDWEAR LIST

****

Ref. No.	Part No.	Description
#2	7-627-852-48	SCREW, PRECISION +P1.7X4 TYPE 1
#3	7-627-852-17	SCREW, PRECISION +P1.7X4 TYPE 3
#5	7-685-104-19	SCREW (2X6), TAPPING (B)
#6	7-685-105-19	SCREW (2X8), TAPPING (B)

English
94K0589-1
Printed in Japan
© 1994. 11

Sony Corporation
Consumer A&V Products Company
Personal A&V Products Div.

Published by Home A&V Products Div.
Quality Engineering Dept.

D-130/131

SONY
SERVICE MANUAL

Canadian Model
UK Model
AEP Model
D-130/131
US Model
E Model
Australian Model
D-131

SUPPLEMENT-4

File this supplement with the service manual.

Subject: **1. Correction**
2. Electrical Adjustments (For Supplement-3)
- **Focus/Tracking Gain Adjustment**

1. CORRECTION

Please correct your service manual (9-959-403-11) page 26, supplement-3 (9-959-403-83) pages 25 and 30.

Ref. No.	Incorrect	Correct
M902	X-2626-171-2 MOTOR ASSY, SLED	X-2625-171-2 MOTOR ASSY, SLED

2. ELECTRICAL ADJUSTMENTS

Focus/Tracking Gain Adjustment

A servo analayzer is necessary in order to perform this adjustment exactly.

> However, this gain has a margin, so even if it is slightly off, there is no probrem. Therefore, do not perform this adjustment.

Focus/tracking gain determines the pick-up follow-up relative to mechanical noise and mechanical shock when the 2-axis device operates. However, as these reciprocate, the adjustment is at the point where both are satisfied.

- When gain is rased, the noise when 2-axis device operates increase.
- When gain is lowered, it is more susceptible to mechanical shock and skipping occurs more easily.

This adjustment has to be performed upon replacing any of the following parts.

- Optical pick-up
- RV503 (Focus gain VR)
- RV504 (Tracking gain VR)

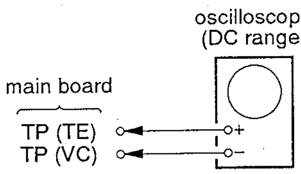
> Normally, be sure not to move RV503 (focus gain VR) and RV504 (tracking gain VR).

Adjustment method:

– Focus Gain Adjustment –

This adjustment is not performed.
If focus gain VR RV503 is turned, set to mechanical center.

– Tracking Gain Adjustment –
(perform at normal operation)



1. Place the optical pick-up level, horizontally. (If the optical pick-up is not level, the 2-axis device will be weighted and adjustment cannot be done.)
2. Connect the osilloscope to TP (TE) and TP (VC) on main board.
3. Set the disc (YEDS-18) and press the ▶II key.
4. Turn RV504 slightly counterclockwise (tracking gain drops) and obtain a waveform with a fundamental wave (waveform has large waves) as in Figure 1.
5. Turn RV504 slowly counterclockwise (tracking gain rises) until the fundemental wave disappears (no large waves) as in Figure 2.
6. Set RV504 to the position about 30 ° clockwise form the position obtained in step 5. If RV504 contact point is more than 90 ° clockwise from mechanical center, tracking gain is too high. In this case, readjust from step 4.
7. Press ▶▶I or I◀◀ key and observe the 100 track jump waveform. Check that no traverse waveform appears for both ▶▶I and I◀◀ directions. (See Figures 3 and 4.) It is acceptable if the traverse waveform appears only now and then, but if it appears constantly, raise tracking gain slightly and check step 7 again.
8. Check that there is not abnormal amount of operation noise (white noise) from the 2-axis device. If there is, tracking gain is too high, readjust starting with step 4.

The waveforms are those measured with the oscilloscope set as shown below.

- VOLT/DIV: 0.2 V
- TIME/DIV: 5 ms

- Waveform when tracking gain is lowered.
  Fundamental wave appears (large waves).

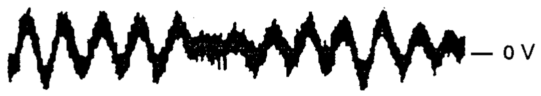


Fig. 1

- Waveform when fundamental wave disappears (no large waves).

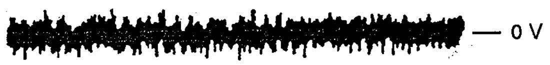


Fig. 2

- Waveform with no traverse waveform during 100 track jump. (Brake application is smooth because of adjustment.)

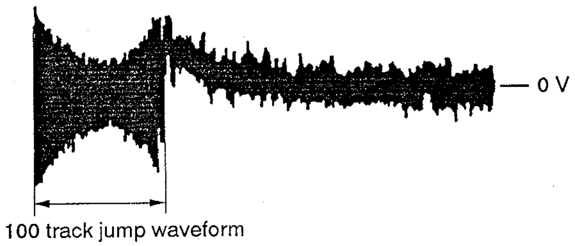


Fig. 3

- Waveform with traverse waveform during 100 track jump. (Brake application is poor because of adjustment.)

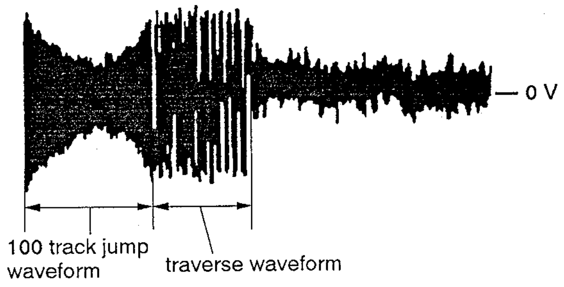
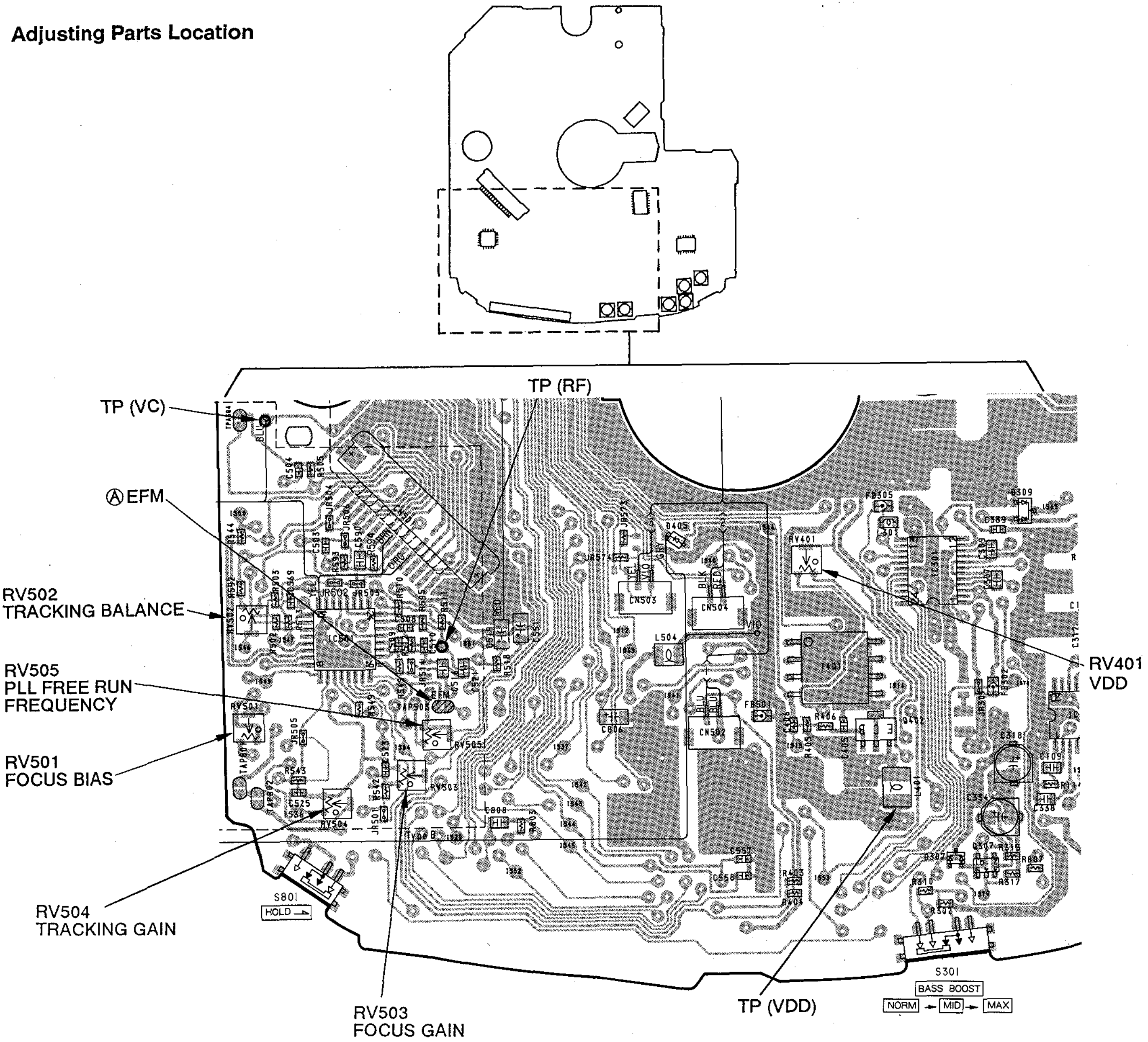


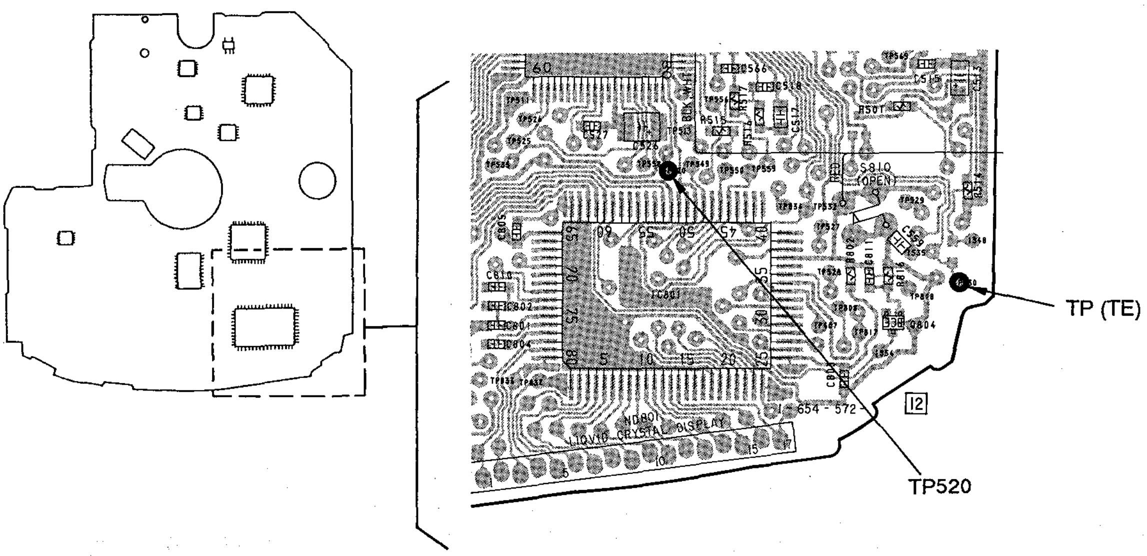
Fig. 4

Adjusting Parts Location

– Side A –


TP (VC)
TP (RF)
Ⓐ EFM
RV502
TRACKING BALANCE
RV505
PLL FREE RUN
FREQUENCY
RV501
FOCUS BIAS
RV504
TRACKING GAIN
RV503
FOCUS GAIN
TP (VDD)
RV401
VDD
S801
HOLD
S301
BASS BOOST
NORM
MID
MAX

– Side B –


S810
(OPEN)
IC801
LIQUID CRYSTAL DISPLAY
654 - 572
TP (TE)
TP520

English
95F0593-1
Printed in Japan
© 1995. 6

Sony Corporation
Consumer A&V Products Company
Personal A&V Products Div.

9-959-403-84

Published by Home A&V Products Div.
Quality Engineering Dept.